



ARNOLD ARBORETUM

HARVARD UNIVERSITY



BULLETIN

OF

POPULAR INFORMATION

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JAMAICA PLAIN, MASS.

APRIL 30, 1924

The Pinetum. The plants in the Pinetum have not before passed through the winter in better condition than they have this year. Even most of the species about which we are always more or less concerned are now in good condition. The most injured species is the short-leaved Pine of the southern states, *Pinus echinata*. This is a widely distributed and extremely valuable timber tree, ranging from Long Island and Staten Island, New York, to Florida and westward to Texas, Oklahoma, Arkansas and Missouri, being the principal timber Pine west of the Mississippi River. The largest plants in the Arboretum have been growing here since 1879 and were raised from seeds gathered in Missouri. The leaves have always suffered and are sometimes entirely killed, the trees producing a new crop, or the ends are killed as they have been during the past winter. The trees are poor and thin, and probably will never be of much value in New England for ornament or timber. The other conifer which has suffered during the winter is *Tsuga heterophylla*, one of the largest and most beautiful conifers of our northwest coast where it ranges from Alaska to Washington and California, and eastward to the western base of the Rocky Mountains of Idaho. The coast tree has often been planted in Europe with great success but it has not proved hardy in New England. We have grown, however, in a sheltered position on Hemlock Hill since 1898 plants gathered in Idaho which have generally grown well but during the past winter the leaves have been badly browned. Among other conifers of doubtful hardiness are the Japanese *Cryptomeria japonica*, *Picea Breweriana*, and *Libocedrus decurrens*. The *Cryptomeria* is one of the great trees of the world and the largest trees planted by man

several centuries ago are some of this species in the avenue of this tree leading to the Tombs at Nikko in Japan. Outside of Japan, even in the most favored parts of Europe, it does not grow particularly well, and in New England it will never be more than a curiosity. *Picea Breweriana* is a large tree of northwestern California and southeastern Oregon. This is the last of the large conifers discovered in California and is still little known in gardens. The Arboretum plant is in a sheltered position on Hemlock Hill where it has been growing slowly for ten years and is perfectly healthy, all the earlier attempts to cultivate this tree here having failed. The leaves of the *Libocedrus* are often browned but are quite green this spring. This tree has been grown here since 1898 and was raised from seeds collected at East Applegate, Oregon. It is not probable that it will ever make in New England a large or valuable tree. It is interesting that one species of the large and important genus *Cupressus* has lived uninjured on Hemlock Hill during the past winter. This is *Cupressus Macnabiana*, a well known California tree long cultivated in Europe and recently discovered in Oregon. Seeds from an Oregon tree were obtained in 1917 and these seedlings have so far proved perfectly hardy.

Of the few California conifers like the Sugar Pine and the mountain White Pine which are established in the Arboretum few of the trees are confined to the state, the others ranging out of the state north, and often east to the Rocky Mountains. The one exception is one of the two Foxtail Pines, *Pinus Balfouriana*. This is a dwarf, slow-growing tree first discovered on Scott Mountain west of Mt. Shasta in the northwestern part of the state and later on the Whitney Plateau of the southern Sierra Nevada where it forms extensive open forests up to altitudes of 11,500 feet. The Arboretum plant was obtained in 1908 from the Biltmore Nursery in North Carolina. It has grown very slowly but appears perfectly hardy but will never be more in this climate than a curiosity. This is true too of the other Foxtail Pine, *Pinus aristata*, of northern Arizona and New Mexico, and southern Colorado. This tree has been growing in the Arboretum since 1910 when it was obtained from the Hesse Nursery in Germany. *Pinus Balfouriana* is interesting as the only conifer confined exclusively to California which has proved hardy in the Arboretum. In addition to those which grow north and east of the state *Pinus ponderosa* var. *Jeffreyi*, which grows fairly well here, extends from the southern and western Sierra Nevada into Lower California.

The most beautiful conifer introduced into cultivation by the Arboretum is probably *Tsuga caroliniana*. The seeds of this tree were first planted at the Arboretum in 1881 and the trees raised from these seeds are to most people the handsomest conifers in the collection, almost as broad as tall, thickly covered to the ground with gracefully drooping branches, and clothed with leaves dark green above and pale below. It has taken a long time for the beauty of this tree to be really appreciated, and there are few if any cultivated large trees outside of the Arboretum. It is becoming better known, however, every year, and one Massachusetts nursery company can now supply plants of various sizes in great numbers and at reasonable prices.

The Colorado *Picea Engelmannii* of the Rocky Mountains is another

good introduction of the Arboretum. This is the handsomest of the North American Spruce-trees and the most valuable as a timber tree of them all. At its best it is sometimes one hundred and twenty feet high with a tall trunk often nine feet in diameter, frequently forming great forests up to altitudes of 10,000 to 12,000 feet, and is widely scattered above 5000 feet through the whole Rocky Mountain system from Alaska and British Columbia to southern New Mexico and northern Arizona. This tree has been grown in the Arboretum since 1879 when seeds collected by the late Dr. C. C. Parry were sent here from the Pike's Peak region of Colorado. It has grown rapidly in the Arboretum where it has always been perfectly hardy and has formed a narrow columnar head of pale gray-green leaves. Its only defect as an ornamental tree here is the tendency of the older plants to lose their lower branches—an advantage rather than a defect in a tree which will be grown more for the production of timber than for ornament. The loss of the lower branches discloses, too, the exceptionally beautiful gray scaly bark tinged with red.

Picea omorika, the Spruce-tree of southeastern Europe, is the third of the really great conifers introduced by the Arboretum. This is the important Spruce-tree of southeastern Europe where it forms or has formed great forests. Seeds of this tree sent by the late Dr. Carl Bolle of Berlin were planted in the Arboretum in 1881 and have grown into handsome compact pyramids of yellow green leaves pale below. The only drawback to this tree is that the leading shoot is sometimes killed by the insect which destroys the leader of the White Pine (*Pinus Strobus*).

That this Pinetum has done useful work is shown in the case of conifers of wide distribution in demonstrating that the plants raised from seeds gathered in some parts of their range are hardier than in others. The best results of this sort have been obtained perhaps with the handsome and useful Douglas Spruce (*Pseudotsuga taxifolia*). This tree is widely distributed and grows to its largest size on the Pacific coast from southern British Columbia to California. The trees from the coast states have never proved really hardy in the east, but in 1873 and 1874 Dr. Parry sent to the Arboretum from Colorado seeds from which a perfectly hardy race of this tree was raised; and the trees which in late years have been so largely planted in the eastern states have been raised from seeds collected in Colorado.

Almost equally interesting is the so-called Red Cedar, *Thuja plicata*, of the northwest coast region from Alaska to Mendocino County, California, ranging eastward to the western base of the Rocky Mountains in Montana, and in the coast region often growing to the height of two hundred feet and forming a gradually buttressed base often fifteen feet in diameter at the ground level. From these trees the Indians of the coast made their great war canoes, and more recently it has furnished the best material for shingles and the other covering of houses. The coast tree never proved hardy here, but in 1880 one of the Arboretum collectors sent to the Arboretum a small bundle of its seedlings gathered on the mountains of Idaho. These plants have never been injured and have grown well and fairly rapidly, are now all handsome trees and among the most interesting conifers in the collection.

Probably all of the plants of this tree growing in the eastern states have been propagated by cuttings from the Arboretum trees where there are now four or five good specimens.

The beautiful Silver Fir of the coast, *Abies grandis*, which ranges from northern Vancouver Island to northern California, also extends inland along the mountains of northern Idaho, and some of the Idaho plants have done well here for forty-four years and are in a healthy condition.

Probably, however, the most generally interesting experiment of the sort made by the Arboretum is the one with the Cedar of Lebanon. For centuries it was believed in western Europe that this tree grew naturally only on Mt. Lebanon in Palestine, and all the trees in cultivation were raised from seeds gathered on the Lebanon or from the trees grown from these seeds in England or France, and succeeded in growing to a great size and beauty in these countries. The trees from Palestine were never hardy in New England or really healthy in any part of the eastern states. A comparatively few years ago it was discovered that the Cedar of Lebanon formed forests on the Antitaurus Mountains in Asia Minor about five hundred miles north and in a much colder region than the Lebanon. In 1901 the Arboretum sent a collector from Smyrna to the Antitaurus to collect seeds of the Cedar of Lebanon. He was very successful and sent to the Arboretum a quantity of seeds and a large amount of herbarium material. Much of the seed was distributed at once in the United States and in Europe, but no report from it has ever been received at the Arboretum. The seeds planted here, however, grew well but the trees have grown irregularly in size. The tallest of them are already at least thirty feet high and have grown more rapidly than any seedlings of conifers planted here in the Arboretum. These trees are perfectly hardy, although during one exceptionally severe winter the leaves of a few of them were all killed. A new crop of leaves soon appeared and the growth for that year even does not appear to be at all checked.

It is believed that what is certainly the largest collection of cone-bearing trees and shrubs in the United States is growing in the Arboretum, although it is certain that most of them will never be able to grow here to the size which these trees attain in better soil and a more temperate climate.

The Arboretum offers exceptional opportunities for the student of conifers in its herbarium which is believed to be the best in the world; only the few species already known which occur on the mountains of New Guinea are unrepresented in it.

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JAMAICA PLAIN, MASS.

MAY 6, 1924

On the 1st of April spring in the Arboretum was probably ten days or two weeks earlier than usual, but owing to much cold and rainy weather flowers now look as if they might be as late when fully open as they were early a month ago. The Missouri and eastern Asiatic Witch Hazels blooming in January and February are the earliest plants to flower in the Arboretum; these are shrubs or shrub-like trees, and the earliest of the large trees which shows its flowers in this climate is the Silver or Soft Maple, *Acer saccharinum*, which blooms here by the first or middle of March and has nearly ripened its seeds before the leaves are half grown. It is interesting that the seeds of this tree fall as soon as ripe and germinating at once produce plants with several pairs of leaves before the end of summer. This is a large, fast-growing tree, widely distributed from New Brunswick to Louisiana, and to Nebraska and Missouri, reaching often the height of one hundred and twenty feet, with a trunk three feet in diameter and a drooping head of wide-spreading branches. Very common on the sandy banks of streams and less common in deeply submerged swamps, it is less abundant near the Atlantic coast and at high altitudes on the Appalachian Mountains. This tree is so easily transplanted and grows so rapidly that it has been largely used in the United States as a street and roadside tree, but the brittle branches which break easily detract from its value for such purposes; and the wood is less valuable than that of the Sugar or Red Maple. Several forms differing slightly in the shape of the leaves, and one a small shapely shrub, are occasionally cultivated.

Few trees have flowered during April in the Arboretum. The prin-

cipal ones have been the Red Maple, *Acer rubrum*, both with scarlet and with yellow flowers and fruit; *pallidiflorum*, and the common American Elm, *Ulmus americana*. The three Silver Poplars, *Populus alba* and *P. canescens* of Europe and *P. tomentosa* from northern China, one of the handsome and valuable trees introduced by the Arboretum, and the common eastern Cottonwood, *Populus balsamifera*, variety *virginiana*, more generally known perhaps *Populus deltoides*, have been covered with flowers, as have many species of Willows, including a few rare species like *Salix irrorata*, *S. Laescadiana*, *S. stipularis*, *S. ferruginea* and *S. Siegartii*.

More shrubs than trees have flowered in April. The one with the most conspicuous flowers has been *Magnolia stellata*, of which there are a number of large and small plants in front of the Administration Building. This is an extremely large, round-headed shrub with large dark green leaves which, like those of all the Magnolias which flower before the leaves appear, fall without change of color. This plant rarely ever has produced fruit here, but every autumn it is covered with flower-buds. These are never injured during the winter but the flowers, which are about four inches in diameter, open so early that the numerous loosely arranged petals are usually ruined nine years out of ten by a late frost which turns them brown. This year even when there have only been the slightest frosts in April the petals have suffered somewhat. Very little is known about this plant. By a mistaken determination it was at first called *Burgerea stellata*, and it has also been called by S. B. Parsons *Magnolia Halleana*, the name under which it is still often cultivated in this country where it is not rare. Although this Magnolia was cultivated in Japanese gardens before the days of Von Siebold it has not yet been found as a wild plant in Japan, although Veitch speaks of it in the "Hortus Veitchiana" as a native of Fujiyama. It was introduced into Europe by Veitch in 1862 from a garden in Nagasaki, and the same year it was brought to the United States by Dr. George R. Hall and sold by him to the Parsons Nursery at Flushing, Long Island, where it was largely propagated. Dr. Hall, who before 1862 had never traveled much in Japan, no doubt found the plant in a garden near one of the ports. Nothing is known of it except what has been gathered from these cultivated plants. It is possibly a native of Korea and was early introduced into Japan as a garden plant from that country. It is entirely hardy in Massachusetts and the early opening flower-buds suggest a northern origin. No Magnolia has been found in northern China yet but much of Korea has been only recently explored. It is probable that *Magnolia stellata* will prove hardy further north than any species with flowers opening before the leaves, and that it may be more successful as far north as Montreal or Toronto than it has been in Massachusetts. The Arboretum would be glad to hear of the hardiness of this plant in any part of Canada. The pink-flowered form of *Magnolia stellata*, which probably originated in a Japanese garden, is flowering well in the Arboretum this year.

Forsythia ovata, a native of the Diamond Mountains of Korea, and in its range the most northern of all the species of this genus, was introduced by the Arboretum from seeds collected by Wilson in 1918.

A plant of this species flowered slightly last year, but by the middle of April this year was thickly covered with flowers which opened about two weeks earlier than those of *Forsythia Fortunei* or its hybrids. This promises to be an extremely valuable introduction as it will be possible to grow it much further north than any of the other species of the genus, and in this climate the flower-buds will probably never be injured as they often are on the other species, especially those of the hybrid *F. intermedia* of which several forms are in cultivation. These are the result of crossing *Forsythia suspensa* var. *Fortunei* with *F. viridissima* which is the most southern and tender species. As a flowering plant one of these hybrids called *spectabilis*, which originated in Germany, is the handsomest of all Forsythias, but in winter too many of the flower-buds are killed. In the Arboretum *Forsythia Fortunei* can be successfully cultivated but in the north it should be replaced by the Korean species. *F. ovata* is a large shrub with light yellow branches, broad, long-pointed, coarsely toothed leaves from four to five inches in length and from three to four inches in width, and clear primrose colored flowers smaller than those of *F. Fortunei* or any of the forms of its hybrid. This species may prove useful to cross with *F. Fortunei* or the hybrid *intermedia* for the production of a new hardy form for the north.

The most beautiful plants in flower in the Arboretum this week are four single-flowered Cherry-trees on the right hand side of the Forest Hills road a little way below the Forest Hills gate. Two of these are the Spring Cherry of the Japanese, *Prunus subhirtella*, which as it grows in the Arboretum is a large tree-like shrub rather than a tree, and certainly when in flower the most beautiful of all the Cherry-trees or shrubs which have been growing in the Arboretum. It is not known as a wild plant but is not uncommon in the gardens of western Japan, although rarely seen in those of Tokyo. The fact, too, that it does not produce itself from seed is another reason why the Spring Cherry is so rarely seen in the United States and Europe, where it was first introduced by the Arboretum in which it has been growing for thirty years, two small plants having been received in 1894 in pots from the Botanic Garden in Tokyo. As it grows in the Arboretum *P. subhirtella* is a shrub eighteen or twenty feet tall and nearly as broad with pink petals which become white before they fall and which are followed by small black fruit. This fruit when planted produces two varieties of this plant, principally the variety *ascendens*, which is a tall rather slender tree not uncommon in the woods of central Japan, and it is these seedlings which furnish the best stock on which to graft *Prunus subhirtella* itself. Still extremely rare in gardens, *P. subhirtella ascendens* is a good garden plant. Much better known is its variety *pendula*. This is the Japanese Weeping Cherry, which has been largely cultivated now for fifty years in this country, and is common in the neighborhood of Boston and New York. The trees are beautiful when covered with their small pink flowers, but these last only for two or three days. Another variety of *Prunus subhirtella* (var. *autumnalis*) appears to be a plant of considerable promise, especially as it flowers in both spring and autumn. This is a shrub, or in Japan occasionally a small tree, with semi-double pink and white flowers which open in

the spring a day or two later than those of the variety *pendula*. The autumn flowers are rather smaller than those of the spring crop, but opening in October never fail to create interest and curiosity.

The Sargent Cherry so-called, a northern form of *Prunus serrulata* (var. *sachalinensis*) is the handsomest of all Cherry-trees of large size, as *Prunus subhirtella* is the handsomest of the species which are shrubs rather than trees. The large single rose-colored or pink flowers which are opening this week are short lived but very abundant; and the hardiness of the trees, which have not been attacked here yet by disease, the beauty of the large green leaves brilliantly colored in the autumn, and the lustrous bark make this the handsomest of Cherry-trees. In northern Japan the Sargent Cherry was once a common inhabitant of the forest, growing sometimes to a height of eighty feet with a tall massive trunk. Such trees have been sought for the value of the timber they produce and are fast disappearing. This tree was first raised in 1891 in the Arboretum from seeds presented by Dr. William Sturgis Bigelow, of Boston, and his tree, the largest specimen standing in the United States, and probably in Europe, is growing just below those of *Prunus subhirtella*. A taller and narrower tree raised from seeds collected by Prof. Sargent in Japan in 1892, is standing by the Forest Hills Road near its junction with the Meadow Road. Some of the handsomest and hardiest of the double flowered Cherry-trees cultivated by the Japanese, like *albo-rosea* and *fugenzo*, better known in nurseries as "James H. Vietch," seedlings of this species, supply the best stock on which to work most of the double flowered Japanese Cherries, and the reason they have failed here and in Europe is because they have been worked usually on *Prunus avium* which has not proved a successful stock for it. Fortunately several of the Japanese trees in the Arboretum are large enough to produce abundant crops of seeds, and there are a few other plants in eastern Massachusetts which usually ripen their seed every year. Nurserymen who wish to supply the demand for double flowered Japanese Cherry-trees can obtain the seed from these trees, and stock of all the best varieties can be obtained from the trees which were sent several years ago from the Arboretum to the Park Department of Rochester, to be grown for this purpose. There is no reason therefore why thousands of the best forms of these double-flowered Cherry-trees, hardy, on permanent stock, should not be procurable in a few years in this country. As the seeds from the Arboretum have now been distributed in this country for several years to a number of nurserymen and others, there are probably already a number of plants here large enough for stock.

Prunus incisa, the fourth of the early flowering Japanese Cherries, is again in flowers. It is still a small treelike shrub, differing from *Prunus subhirtella* and *P. serrulata* in its deeply lobed leaves and pure white petals. These last only a few days, but the calyx, which gradually turns red remains on the fruit two or three weeks and is distinctly conspicuous. Although a common plant in Japan on the Hakone Mountains and the slopes of Fuji-san, this tree is still rare in American and European gardens where it has been usually incorrectly named. The oldest plant in the Arboretum, which is growing near *P. subhirtella*, was obtained in 1912 from a German nursery.

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JAMAICA PLAIN, MASS.

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Pieris or **Andromeda floribunda**, judging by an experience of over fifty years, is the only broad-leaved evergreen to which nothing ever happens in this climate. It is not attacked by borers, the leaves never become discolored, and the flower-buds formed in autumn and almost as conspicuous during the winter as the flowers are not injured by the lowest temperature which has been recorded in southern New England. It is a round-topped shrub of compact habit, sometimes eight or ten feet across and five or six feet high, with small pointed, dark green leaves and short terminal clusters of pure white flowers. A native of high altitudes on the southern Appalachian Mountains, this shrub is rare and local in its distribution as a wild plant, but for more than a century has been valued in England and largely propagated by English nurserymen. It can be found in several American nurseries and is now covered in the Arboretum with its pure white flowers. A comparatively small compact shrub, it is more valuable for general planting than any of the dwarf *Rhododendrons*.

Amelanchiers. The Shad Bushes, as *Amelanchiers* are often called because they are supposed to bloom when shad begin to ascend the rivers from the sea, add much in early May to the beauty of the Arboretum. It is a genus in which North America has almost a monopoly as only one small shrubby species grows on the mountains of central Europe, and another in China and Japan. In North America it grows in many forms from the Atlantic to the Pacific and from Newfoundland to the Gulf States. Some of the species are trees and others large or small shrubs; they flower in the spring before the leaves ap-

pear or when they are partly grown, or in the case of a few species when the leaves are fully grown, the flowering time of the whole group extending through several weeks. They all have handsome flowers, with long delicate white petals and small, dark blue or nearly black pome-like fruit open at the top, the flesh of which in most of the species is sweet and edible. *Amelanchier canadensis*, which is the first species to bloom in the Arboretum, has now been in flower for several days. It is a tree which occasionally grows to the height of sixty feet with a tall trunk eighteen inches in diameter. The leaves begin to unfold as the flowers open and are then covered with silky white hairs, making the whole plant look white at this time of the year. This beautiful tree does not grow naturally nearer Boston than western Massachusetts; it is common in western New York, and it is the common and often the only species in the southern states in which it grows to the Gulf coast. Owing to an old confusion in determination and names this fine tree, which was originally named by Linnaeus, has been rare in gardens, an entirely different plant having appeared in them under this name. This is also a fine tree, differing conspicuously from *A. canadensis* in the red color of the young leaves which are destitute or nearly destitute of any hairy covering. By botanists this tree is now called *Amelanchier laevis*. It is a native tree in the Arboretum and there are a number of specimens growing naturally on the bank above the Crabapples on the left-hand side of the Forest Hills Road where it blooms a few days later than *Amelanchier canadensis*. Another species which is a native plant in the Arboretum, *A. obovalis*, is a large shrub rather than a tree with young leaves like those of *A. canadensis* covered with white silky hairs. This shrub has been largely planted in the Arboretum along the drive of the Valley Road near the base of Hemlock Hill. Several other species of the eastern states are established in the Arboretum; these are all shrubs, often spreading into wide clumps. There are other species in the west still to introduce into cultivation, and on the whole the genus is not well understood either in the field or in gardens.

Corylopsis is an Asiatic genus of the Witch Hazel Family, with fragrant yellow flowers in long drooping clusters appearing before the leaves which have a general resemblance to those of the Witch Hazel. Nearly all the species are represented in the Arboretum but they are not all hardy, and the flower-buds of the Chinese species are usually killed. Three Japanese species, however, are flowering well this year, *C. Gotoana*, *C. pauciflora*, and *C. spicata*. The first was introduced into the Arboretum from central Japan; it is the hardiest and largest specimen, growing five or six feet tall and broad in this climate. It can be considered one of the handsomest of the early spring-flowering shrubs. The other two species are flowering much better than usual this year but cannot be depended on every spring.

Prinsepia sinensis. The value of this handsome shrub becomes more evident every year. It is the first plant in the Arboretum to unfold its leaves; these are already fully grown and the bright yellow flowers are beginning to open. It is a perfectly hardy, fast-growing shrub; the young leaves and the flowers have never been injured by spring

frosts, and it can be said that it is the best contribution Mongolia has ever made to our gardens. *Prinsepia sinensis* has proved difficult to propagate but occasionally produces a few seeds which have germinated. It can be increased, too, by cuttings but it is doubtful if this shrub becomes popular in this country until the Arboretum plants begin to fruit more freely. The second species, *Prinsepia uniflora*, from western China, with narrower leaves and smaller white flowers, is perfectly hardy but in every way a less desirable ornamental plant. Either species would make an excellent hedge.

There is a good collection of wild Pear-trees growing in the Arboretum, especially those from western China, and some of them are among the most beautiful of all flowering trees. To pomologists, too, they are of special interest as the wild types from which the cultivated pears have been derived, and as possible factors in the production of new and perhaps hardier races of fruit trees. There is no native Pear-tree in Japan or any part of America, but they are common and widely distributed in China, on the Himalayas, in southwestern Asia and in southeastern and southern Europe. The most important Pear-tree but not the most beautiful in flower is *Pyrus communis*, one of the European species from which the common garden pears have been derived. Some of the species, like *Pyrus elaeagnifolia*, of southeastern Europe are conspicuous in early spring before the flowers open from the silver color of the leaves, but as ornamental trees some of the Chinese species are better worth cultivating than those from Europe or western Asia. All the Chinese species are now growing in the Arboretum and many of them have large, handsome, lustrous leaves and fruit which is conspicuous. Among the species longest in the Arboretum the handsomest is perhaps *P. ovidea*, a native of the northern provinces and one of the first in the collection to open its flowers. These are followed by yellow juicy fruit of good flavor which, unlike those of all other Pear-trees, are largest at the base and gradually taper to the apex. Another remarkable thing about this tree is that in the autumn the leaves turn as bright scarlet as those of any Red Maple. As an ornamental tree this Pear-tree deserves the attention of gardeners and its hardiness and the quality of its fruit suggest its possible value in the production of a new race of fruit trees. Another Chinese species, *Pyrus Bretschneideri*, is also well worth the attention of pomologists. It is a tree with large lustrous leaves, large flowers and yellow, nearly globose well flavored fruit. This is probably, in part at least, the wild origin of the excellent pears which are sold in Peking during September and October. The brown-fruited *Pyrus serotina*, one of the species discovered by Wilson in western China, is of particular interest as from this species are derived the round russet pears which in many forms have been so generally cultivated in Japan and are occasionally seen in America. This tree has been growing in the Arboretum since 1887. The Leconte and Keiffer Pears are two hybrids well known in this country where they were raised by crossing the garden Pear with cultivated forms of *P. serotina*. These hybrids have not proved very hardy in the north, but have been planted in immense numbers in some of the southern states where they produced large crops of fruit until the trees were attacked by the pear blight which has ruined many of these

orchards. Pear blight has never attacked *Pyrus ovidea*, which has been growing for twenty years in the Arboretum, or *P. Bretschneideri*.

Plum-trees. North America is the real home of Plum-trees as it is of Hawthorns. The different species range across the continent from the valley of the St. Lawrence River to the Rio Grande. The species and individuals are most abundant in eastern and southern Kansas, eastern Oklahoma, southern Arkansas and Texas from the valley of the Red River to the Edwards Plateau, and the genus is represented in this region by more species than are found in all the world outside of North America. Some of the species are of considerable size and others are large or small shrubs which frequently spread in sandy soil into thickets covering acres. The first of the American Plums to flower in the Arboretum, the so-called Canada Plum, *Prunus nigra*, has already opened its flowers. This is a northern tree ranging in Canada from New Brunswick through the valley of the St. Lawrence River and along the northern shore of Lake Superior to Winnipeg. It occurs rather sparingly in northern New England, western New York and westward to Montana. It is a handsome little tree with dark close bark, a round-topped head of spreading branches, wide, coarsely-toothed glandular leaves, and large flowers, which unlike those of other American Plum-trees turn pink as they begin to fade. Several forms grown for the excellence of their fruit are cultivated by pomologists. The flowers of *Prunus nigra* are followed in a few days by those of *P. americana*, the blue-fruited *P. alleghaniensis*, a native of southern Connecticut and western Pennsylvania, an interesting species of considerable ornamental value, *P. Watsonii*, the little Sand Plum of Kansas and Oklahoma, and *P. Munsoniana* of the Kansas to Texas region, the origin of Wild Goose and many other varieties cultivated for their fruit, and by *P. hortulana*, a native of the region from southern Illinois to southern Missouri and Oklahoma. This is perhaps the handsomest of the American Plum-trees and one of the last to flower. In cultivation it is a round-topped tree with wide-spreading branches. The flowers are not more than half an inch in diameter and open before the leaves which are narrow, long-pointed and lustrous. The fruit is scarlet, very lustrous, and looks like a large cherry. Forms of this tree, like Golden Beauty, Kanawha, Wayland and Cumberland, are grown and distributed by nurseries as fruit trees, but quite apart from the value of the fruit. The only Asiatic Wild Plum, *P. salicina*, blooms as early as *P. nigra* and is now in flower. As an ornamental tree this has no special value but it is esteemed by pomologists and is now widely planted in this country in many forms for its edible red or yellow fruit.

The Sugar Maple. The Sugar Maple is again exceptionally fully covered with its long clusters of expanded flowers, and just now is an object of great beauty and interest. A true lover of the country, life in cities and their suburbs has little attraction for the Sugar Maple, one of the most splendid of the whole genus. It needs the free and pure air of the forests and country roadsides, and finds its greatest happiness on the low hills of New England and Michigan, and in the rich protected valleys of the Appalachian Mountains. In such positions few trees surpass it in size or in the splendor of its autumn foliage.

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OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

MAY 21, 1924

Crabapples. With the exception of *Prunus*, including the Cherries and Plums, *Malus*, the generic term of the Apples, is the most widely distributed of the arborescent genera of the Rose Family which extends across the northern hemisphere. Many of these trees will be in bloom this week. The Arboretum collection is a large one and much attention has been paid to it during the last forty years. The flowers of these trees make one of the principal spectacular displays of the year in the Arboretum, and only that made by the Lilacs attracts a larger number of visitors. The only drawback to these plants is their tendency to hybridize. Most of the plants are generally supposed to be species, and none of the species raised from seeds gathered from plants in a large collection like that in the Arboretum resemble their parents, although it is impossible to determine whether the change in the seedlings is due to an earlier cross in the Arboretum plant or to the influence of one of its Arboretum neighbors. The collection here is one of the largest in cultivation, but only five plants have been seen growing with every evidence of species as seeds collected from these wild plants do not differ from those of their parents. These five wild plants in the collection are *Malus baccata* from eastern Siberia, its variety *mandshurica* from Manchuria, Korea and northern Japan, *M. Sargentii* and *M. Sieboldii* var. *arborescens* from Japan, and *M. prunifolia* var. *rinki*, and *M. theifera* from western China.

Malus baccata, which is one of the earliest Crabapples to flower, is a common large wide-spreading tree with white flowers and small green or reddish fruit, and although perfectly hardy is one of the least

desirable of the Asiatic Crabapples as a garden plant. It reached western Europe in 1776 and was cultivated as early as 1811 in the Elgin Botanic Garden established by Dr. David Hosack near New York in 1801. A more valuable garden plant is the eastern variety *mandshurica* which is the earliest Crabapple to flower in this region and which has been covered for several days with its pure white or greenish flowers more fragrant than those of any other Crabapple. It is growing in the group at the base of Bussey Hill where it is a dense bushy tree about sixteen feet tall and nearly as broad. The abundant fruit is round, yellowish, and not much larger than a pea.

Malus Sargentii, which was discovered by Professor Sargent on the borders of a salt marsh in the neighborhood of Muroran in northern Japan, is a prostrate shrub with wide-spreading rigid branches which lie flat on the ground. The flowers are borne in umbel-like clusters, are saucer-shaped, round and of the purest white, and are followed by masses of wine-colored fruits which remain on the plant until spring unless eaten by the birds. The plants usually sold in this country as *M. Sargentii* are tree-like in habit with a well-formed stem, short spreading branches and small flowers tinged with pink, and are probably hybrids; and it is possible that the original plants in the Arboretum are the only ones in the United States.

Malus Sieboldii was introduced from the gardens of Japan into Europe by Von Siebold in 1853. It is a low dense shrub of spreading habit, with leaves on vigorous branchlets, three-lobed, small flowers tinged with rose in color and small yellow fruits. It is really a dwarf form of a tree which is common on the Korean Island of Quelpaert, and on the mountains of central and northern Japan and is known as the variety *arborescens*. The bushy form was sent in 1876 to the Arboretum from France and the tree form was raised from seed collected in Japan by Professor Sargent in 1892. It is a tree often thirty feet or more tall with ascending, wide-spreading branches, white flowers and minute fruit which on some individuals is red and on others yellow. Although the flowers are small, they are produced in immense quantities, and this species has the advantage of flowering later than the other Asiatic Crabapples.

Malus prunifolia var. *rinki*. The wild type of this apple was discovered by Wilson in central China in 1907 and from seeds sent to the Arboretum plants were raised and have been flowering during the last five years. The fruit of this wild apple is longer than broad, yellow with a reddish cheek or entirely red; it is not depressed at the stem as in the common apple. This is the wild parent of the apples long cultivated in the Orient, and as it thrives in the hot moist valleys of central China as well as in the cold region in the neighborhood of Peking and in northern Korea it may prove valuable to pomologists in breeding a new race of apples. It was this apple which has been cultivated in northern China and it was early introduced into Japan where it furnished the apple of commerce until it was replaced in the late 70s by the introduction of American apples.

Malus theifera when in flower is the handsomest of the wild Asiatic Crabapples. It is remarkable in habit, with upright, spreading, rather zigzag branches which are densely studded with short spurs which bear numerous clusters of flowers white in the bud, becoming pale and almost white when fully expanded. The specific name is due to the fact that the peasants of central China collect the leaves from which they prepare a palatable beverage called "red tea." This is a distinct addition to the Crabapples of recent introduction and should be better known.

Lack of space in this Bulletin prevents a discussion of what little is known of the large number of Asiatic Crabapples which are supposed to be hybrids, and this subject will be taken up in a later Bulletin. The handsomest and best known of these are *Malus spectabilis*, *M. floribunda*, *M. arnoldiana*, and *M. micromalus*, which are already in flower. Practically nothing is known about these plants beyond the fact that they are among the most beautiful of all additions to our northern gardens.

Rhododendron venustum, which is more generally cultivated under the name of *R. Jacksonii*, has been an inhabitant of the Arboretum since 1908. It has proved perfectly hardy and is now covered with its pink flowers. It is a hybrid of *R. arboreum* and *R. caucasicum*, and was raised in England by William Smith at Kingston in 1829, where it blooms from March to May. By English writers on Rhododendrons it is considered one of the most valuable early spring-flowering Rhododendrons for all gardens. It is perfectly hardy and will grow in an exposed position in the poorest soil; it is easily and cheaply raised from layers and probably when better known will be largely used in this country for the edging of beds of broad-leaved evergreen plants. There is in cultivation in England a white-flowered form which originated in Holland, but it is still rare in British gardens and is not yet in the Arboretum.

Early Azaleas. Two plants of *Rhododendron* (Azalea) *Schlippenbachii* have been in bloom during the last two or three days on the upper side of Azalea Path. This Azalea grows on exposed grass-covered cliffs on the east coast of Korea with branches clinging to the ground, but far northward in Korea it is sometimes a shrub twelve or fifteen feet high growing under trees or in open dense forests. It grows further northward than any other Asiatic Azalea and only the *Rhodora* grows further north. The flowers of this Korean Azalea are pale pink marked at the upper base of the corolla with dark spots, and are about three inches in diameter. There can be little doubt of the hardiness of this plant, for in Korea it grows to its largest size where the winter temperature often falls to 30° below zero Fahrenheit, and in the Arboretum it has not been injured by a low temperature. The two largest plants in the Arboretum were raised from seeds collected by Professor Jack in Korea in 1893, but the Arboretum was not the first institution to introduce this plant into European and American gardens, a single plant having been obtained by J. H. Veitch in a Japanese garden in 1892 and sent to England. From this plant were propagated two or three large plants now in this country, one in New Jersey being said

to be already fifteen feet in diameter, and occasionally plants have come to the United States at different times from the Yokohama Nursery Company. Mr. Wilson during his journey in Korea in 1917 secured a large quantity of seeds which have been widely distributed by the Arboretum in the United States and Europe, and have produced several thousand plants; and there is every reason to hope therefore that this, the loveliest of the hardy Asiatic Azaleas, will become a common inhabitant of northern gardens. It is rather difficult, however, to transplant when young and it has been found at the Arboretum that the best way to manage it is to pot one-year-old seedlings and grow them in pots for a year before transplanting them to the open ground.

Another Korean Azalea is also in flower, or just opening its flowers. This is *Rhododendron* (Azalea) *poukhanense*, which was also introduced into the Arboretum from seed collected by Mr. Jack in Korea in 1892. This is a common plant on the bare mountain slopes in the neighborhood of Seoul. As it grows here this Azalea is a low, wide, compact bush which until this year has never failed to cover itself with large, rose-pink flowers which have a strong and pleasant fragrance. It is much liked in the Arboretum but some persons object to the tint of its rose-pink flowers. During the past winter for the first time a good many of the flower-buds have been killed, probably by the extremely cold night in January which did damage to the flower-buds of several plants. There is a large bed of the original plants of this Azalea on the upper side of Azalea Path which has recently been increased by seedlings, which are not difficult to raise. The plants ripen good crops of seed and there is no reason why it should not become more common in gardens than it is at present.

Double-flowered Cherry-trees. A few of these Japanese trees are flowering well; the largest and handsomest of them is the specimen of *Prunus Lannesiana* form *ochichima* now growing in the Peter's Hill Nursery, which was received from the Späth Nursery at Berlin in 1911. This tree is now very beautiful with its large pale pink flowers. There are smaller plants of this form among the Cherries on the right hand side of the Forest Hills Road, where too are blooming three double-flowered forms of the Japanese *Prunus serrulata* var. *sachalinensis* which are among the most beautiful and satisfactory of all these trees which can be grown in Massachusetts. The form *fugenso*, now often cultivated under the name of James H. Veitch, is one of the most beautiful of all double-flowered Cherry-trees. The flowers are rose-pink and are distinguished by two leaf-like carpels. Another form, *alba-rosea*, also with two leaf-like carpels, has flowers pink in the bud, becoming white as they open. The third is the form *sekiyama*; this blooms later than many of the other forms and has large double, rich rose-colored flowers. Mr. Wilson, who has had the best possible opportunity to see the double-flowered Cherry-trees growing in Japan, considers this the handsomest of them all. A large collection of these double-flowered Cherry-trees was planted two years ago on the southern slope of Bussey Hill, but the plants are still small and only a few of them are showing occasional flowers this year.

ARNOLD ARBORETUM

HARVARD UNIVERSITY



BULLETIN

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Lilacs are late in blooming this year but are now fast opening their flowers, and it is possible that Sunday, the 25th, will bring the largest number of visitors of the year to the Arboretum. The earliest species to flower, *Syringa pinnatifolia*, was in bloom on the 12th of May; this is a small compact shrub with small clusters of white flowers valuable only for their fragrance. *Syringa hyacinthiflora* was in flower at about the same time; this is an interesting hybrid between the Chinese *S. oblata* and some form of *S. vulgaris*. It is a large, well-shaped bush with good foliage and small clusters of double bluish-purple flowers which are extremely fragrant. This plant is worth more general cultivation as an interesting hybrid and for its early fragrant flowers. Although many species, chiefly from China, and several hybrids have found a place in a few gardens, when Lilacs are spoken of it is *Syringa vulgaris* and its numerous varieties which are usually referred to. This shrub was planted on land now occupied by the Arboretum as early probably as 1815 when Mr. Benjamin Bussey built his house and planted his garden along the summit of Bussey Hill. He planted a row of purple and white Lilacs along his garden walk and either the original plants or suckers from them have now grown into dense tall hedges on each side of the path and still bloom profusely.

It is now known that *Syringa vulgaris* came originally from the mountains of Bulgaria, and that it reached western Europe by the way of Constantinople in 1597. The date of its introduction into the United States is not known, but it was a common garden plant here before the end of the eighteenth century as Washington planted it at Mt. Vernon in 1785. The plants raised from seed collected from the wild

plant in Bulgaria are in the Arboretum collection which contains now one hundred and eighty-six named varieties. Hardly a week passes without a letter addressed to the Arboretum asks for the names of the best six or twenty-five Lilacs. All the varieties are handsome plants, and persons rarely agree about their individual value. Some persons prefer flowers of one color and other persons prefer flowers of another color; some persons like the Lilacs with double flowers and others dislike them. All the forms of the garden Lilac have practically the same habit and foliage, and the same inconspicuous fruit; they all bloom freely every year, and breeding and selection have not influenced their perfume. There is considerable variation in the size of the individual flowers; the double flowers open generally a little later than the single flowers and last longer. There is little difference in the time of flowering of all these varieties. The size of the flower-cluster varies somewhat on the different forms; it is larger on young plants than on old ones, and it can always be enlarged by severe pruning which increases the vigor of the flower-bearing branches. Many persons who visit the Arboretum find that Bussey's old Lilacs are more beautiful than the more recent Lemoine creations because they are the ones which have long been common in gardens and beloved by generations of New Englanders. A choice of these Lilacs is largely a matter of taste and color, and the Arboretum, in the hope of helping some of its correspondents, offers the following fifty as a good selection of these plants. They are all growing in the Arboretum collection where they bloom usually every year and most of them can now be found in American nurseries:

SINGLE VARIETIES: WHITE, *Madame Florent Stepmann*, *Madame Moser*, *Princess Alexandra*, *Vestale*; PALE, *speciosa*, *spectabilis*, *Clara Cochet*, *Lucie Baltet*, *macrostachya*; MEDIUM, *Amethyst*, *Charles X.*, *Fürst Lichtenstein*, *Gloire de Moulins*, *Marlyensis pallida*, *Pyramidal*, *Ronsard*, *Saturnale*, *Triomphe d'Orléans*, *Ville de Troyes*; DARK, *Congo*, *Diderot*, *Laplace*, *Marceau*, *Montgolfier*, *Negro*, *Philémon*, *Professor Sargent*, *Réaumur*, *Turenne*, *Volcan*, *Edmond Boissier*.

DOUBLE VARIETIES: WHITE, *Edith Cavell*, *Madame Abel Chatenay*, *Madame Casimir Périer*, *Princess Clémentine*; PALE, *Léon Gambetta*; MEDIUM, *Dr. Masters*, *Duc de Massa*, *Jules Ferry*, *Julien Gérardin*, *Maréchal de Bassompierre*, *Maréchal Lannes*, *Maurice de Vilmorin*, *Olivier de Serres*, *René Jarry-Desloges*, *Desfontaines*, *Gaudichaud*, *Président Fallières*, *Président Loubet*, *Thunbergi*; DARK, *Paul Thirion*, *Violetta*, *Georges Bellair*.

In the next issue of this Bulletin a few notes will appear on some of the other species and hybrids of *Syringa*.

Azalea (*Rhododendron*) *lutea*. This *Azalea* produced its fragrant yellow flowers here for the first time in 1909 from seed collected by Dr. Schneider on the Caucasus and is only again covered with flowers this year which have been open for several days. It is remarkable that they are uninjured, although those of *Azalea poukhanense* have suffered for the first time, as have the flowers of *Rhododendron mucronulatum* which have been nearly all killed although this northern China deciduous-leaved plant has been growing in the Arboretum since 1885; it was raised from seed collected near Peking and has never before

lost a flower-bud. If the flower-buds of *Azalea lutea* were hardier this would be one of the most delightful of all Azaleas as the flowers are charming in color and more fragrant perhaps than those of any other Azalea. The plants of this Azalea are growing on the lower side of Azalea Path below the group of *Enkianthus*.

Rhododendron (Azalea) Vaseyi is the earliest of American Azaleas to bloom with the exception of the *Rhodora*, and one of the best introductions of recent years. It is a tall shrub with slender stems and open irregular habit. It grows naturally only in a few isolated mountain valleys in South Carolina where it sometimes reaches a height of fifteen feet. The flowers appear before the leaves in small compact clusters and are pure pink in color, white flowers occasionally appearing. There are large clumps of this Azalea near the end of the Meadow Road which are just now opening their petals. The *Rhodora* (*Rhododendron canadense*), which is also in flower, is probably the least ornamental of all the North American Azaleas. The small flowers are rose-purple in color but when this shrub covers, as it sometimes does, hundreds of acres of swampy ground in extreme northern New England and eastern Canada it makes an attractive show.

Chaenomeles. This is the generic name now given to the red-flowered Quince which was formerly known as *Pyrus japonica*. It has been in American gardens for many years and at one time was one of the most popular plants here, especially in the middle and southern states where it is still common. It is not rare in New England, although perhaps less common here than southward. Occasionally the flower-buds suffer here in severe winters and the plants need constant attention to protect them from the San José scale which commonly infests this Quince. Although first introduced into Europe from Japanese gardens it is not a Japanese but a Chinese plant, and the correct name for it is *Chaenomeles lagenaria*. There is a collection of garden varieties of this Quince, chiefly raised in Germany, in the Shrub Collection, and it is several years since the plants have been so full of flowers. The varieties differ in the color of the flowers and in the size and shape of the plants. The most conspicuous when it is in bloom is the var. *Simonii*, of dwarf habit and with intensely scarlet flowers. The white flowers of var. *nivalis* attract attention, as do the red flowers of the var. *cardinalis*. These varieties are little known in the United States and plants are difficult to obtain. Another species of the so-called red-flowered Quince, which is a native of Japan and a smaller and hardier shrub than the Chinese species, with smaller flowers and fruits and often semiprostrate stems, often called in gardens *Pyrus Maulei*, is rightly named *Chaenomeles japonica*. There is a dwarf variety of this plant with smaller flowers and fruits which is an excellent subject for the rock garden. *Chaenomeles japonica* has been growing in the Arboretum since 1893 when it was raised from seeds collected by Professor Sargent on the mountains of Hondo. A hybrid of the Chinese and Japanese species raised in Switzerland several years ago has received the name of *Chaenomeles superba*. There are several named varieties of this hybrid in the Arboretum differing in the color of the flowers. Of these those named *rosea*, *perfecta* and *alba* are perhaps the most interesting.

Berberis Dielsiana, which was raised from seeds collected by Purdom in the province of Shensi, in China, is one of the handsomest and most vigorous of the Barberries of recent introduction. The largest plant in the Arboretum is growing among the new Chinese Barberries on Bussey Hill where it is already eight or nine feet tall and broad. It is one of the species with flowers in drooping racemes like those of the common Barberry. It is not only a vigorous and handsome plant but is valuable for its early flowers which have opened in the Arboretum as early as the middle of April. It first flowered here in 1916 and is now in bloom. This Barberry deserves the attention of persons interested in early flowering shrubs.

Sorbus auricularis var. **bulbiformis**. This interesting bi-generic hybrid is flowering remarkably well this year on the left hand side and close to the Forest Hills Gate. *Sorbus auricularis*, formerly called in Europe the *Bollwyller Pear*, is a deciduous-leaved tree from twenty to sixty feet high, forming a round bushy head, with ovate or oval leaves rounded or heart-shaped at base, covered above with loose early deciduous down, and flowers from three-quarters of an inch to an inch in diameter. The fruit is pear-shaped, an inch to an inch and a quarter long and wide, red, each on a stalk from an inch to an inch and a half long, with sweet yellowish flesh. It is said to have originated at Bollwyller in Alsace, and was first mentioned by Bauhin as early as 1619. For three hundred years it has been propagated by grafts, for it produces few fertile seeds. The variety in the Arboretum, sometimes called *Pyrus malifolia* and *Sorbopyrus malifolia*, differs chiefly from the type in its broadly top-shaped fruit two inches long and wide and deep yellow when ripe. Spach named and described this tree as *Pyrus malifolia* in 1834 and said that the original specimen at that time grew in the garden of the King of France in Paris, and was thirty feet or more high. This and the Bollwyller Pear are certainly little known in this country and deserve a place in all collections of flowering trees.

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Crabapples form one of the largest and most beautiful of the Arboretum groups of trees and during the last forty years a great deal of attention has been paid to it here; but the Arboretum contains many handsome but still very imperfectly known plants. It has failed to obtain a plant of the type of *Malus pumila*, a native of eastern Europe and western Asia, although it has a collection of numerous forms or hybrids of this plant. The species is the most valuable tree in the world as it is the origin of the orchard apples now cultivated in all the temperate parts of the world and produces high class fruit over a larger area than any other tree, and the wild type of such a tree, the origin of innumerable varieties of the apples of commerce, should certainly find a place in every Arboretum worthy of the name. This type does not appear to be in any European garden and no one seems to know exactly where it grows. To find it an expedition will have to be made especially for the purpose to some remote region of eastern Turkestan. It has not been possible, too, to obtain yet a plant of the wild form of *Malus sylvestris*, the species of western Europe which has also been more or less used in the development of the orchard apple and is greatly needed here.

Hybrid Crabapples. The handsomest Crabapples in the collection are hybrids, at least they are nowhere known as wild plants and do not reproduce themselves from seeds, and can only be propagated by buds or grafts. The first of these supposed hybrids to reach Europe was *Malus spectabilis* which was sent from Canton to England in 1780. It appears to have been widely cultivated in Chinese gardens and flourishes in those of Peking. It was growing in the Elgin Botanic Garden

near the city of New York in 1811 and has been in this Arboretum since 1889. Early in the last century when it was the only Asiatic Crabapple cultivated in this country it was often found here, but fifty or sixty years ago was largely replaced by more recent introductions. *Malus spectabilis* is one of the largest of the Asiatic Crabapples in the collection, growing here to the height of from twenty-five to thirty feet and forming a wide vase-shaped crown of numerous spreading and ascending branchlets. The flowers are pale pink, single or semi-double, and very fragrant. The abundant fruit is pale yellow, nearly globose, and an inch in diameter. One of its parents is undoubtedly *Malus rinki*, the edible Chinese apple. It is hard to form even a guess at its other parent. *Malus micromalus*, which is distinct in its pyramidal habit and early flowers, is possibly a hybrid of *M. spectabilis*. This plant is cultivated in Japan under the name of "kaido" under which it has been growing in the Arboretum since 1888 when plants were first obtained from the Jardin des Plantes in Paris. In habit it is one of the most distinct of all Crabapples and well worthy of a place in every collection of these plants. It is growing both along the Forest Hills Road and in the group at the base of Peter's Hill, but the petals fell nearly a week ago. *Malus Scheideckeri* is also probably a hybrid of *M. spectabilis*, and possibly of *M. micromalus*. It originated in Germany several years ago, and has been in this Arboretum since 1889. It is a small pyramidal tree with small flowers produced in great abundance.

Malus floribunda is now perhaps the most popular in this country of these supposed hybrids. It has generally been supposed to be a Japanese plant but it is not yet known there as a wild tree. It was found by Von Siebold in 1853 in a garden in Nagasaki and sent by him to Europe. Trees of this Crabapple imported from England in 1874 were planted in exceptionally deep and rich soil in the garden at Holm Lea, Brookline, and have become the largest and handsomest Crabapples in the United States, never failing to flower and produce great crops of fruit every year. The oldest plants in this Arboretum were raised from buds taken in 1876 from the plant in Francis Parkman's garden in Jamaica Plain. Japanese botanists confounded *Malus floribunda* with the Parkman Crab, *Malus Halleana*, probably another hybrid of a pyramidal growth and red flowers, which Wilson did not find in Japanese gardens. *M. floribunda* is a broad, round-topped, tree-like shrub sometimes twenty-five feet tall, with stout branches and slender, arching and pendant branchlets. The clusters of flowers are white when fully expanded and rose-red in the bud, and as they open in succession the two colors make a handsome contrast. The fruit is about the size of a pea, yellowish or yellowish brown on some plants and falls in early autumn, but on several seedlings raised at the Arboretum growing near the Administration Building the fruit remains on the branches until spring and supplies the birds with an abundant supply of food. These trees are evidently hybrids. Another hybrid possibly with *M. robusta* appeared here with a lot of seedlings of *M. floribunda* in 1883 and has been named *M. arnoldiana*. It has the habit and abundant flowers of *M. floribunda* but the flowers and fruit are nearly twice as large. It is a handsomer plant than *M. floribunda*, distinguished by its long

arching branches, and is perhaps the most beautiful Crabapple in the Arboretum. The tendency of *M. floribunda* to produce hybrids is well shown in one of the parks of the city of Rochester, N. Y., in which there are growing several trees raised from seeds gathered several years ago from one plant. These Rochester seedlings now produce abundant crops of fruit; this varies on different trees from the size of a small pea to an inch or an inch and a quarter in diameter. On some of the trees it is bright yellow, on others bright red and on others red and yellow. There is less difference in the flowers, but the leaves vary on the different plants in shape and in the absence of the covering of hairs. Most of these trees are worth descriptive names which have not yet been given to them, and show what endless work is before nurserymen who endeavor to raise Crabapples from the seeds of plants growing in large collections. *Malus atrosanguinea*, judging by its habit, is another hybrid of *M. floribunda*, from which it differs in the bright red color of the flowers. Very little is known about the origin of this plant. It is said to have originated in the Spath Nursery in Berlin, and has been growing since 1889 in the Arboretum when it was obtained from the Knaphill Nursery at Woking, England. There are two trees in the Peter's Hill group and they have never before been so beautiful, and no other Crabapple has such brilliant red flowers.

Lilacs. When the Arboretum was founded, in addition to *Syringa vulgaris* and its varieties, there were only in this country the Himalayan *S. emodi*, the Hungarian *S. Josikaea*, and the better known *S. persica*. There are now growing in the Arboretum twenty-five species of Lilacs and four hybrids and their forms. Three or four species found in remote parts of China and described by botanists have not yet been introduced into gardens, and by the use of some of the recently introduced species plant breeders may be able to produce new races which may add new and valuable varieties for the makers of gardens.

Syringa persica was known in England as early as 1658 and has been for a long time an inhabitant of American gardens. It is a beautiful hardy plant with slender, drooping, wide-spreading branches, narrower leaves than those of the common Lilacs and small, fragrant, lavender-colored flowers in short compact clusters. There is a variety with white flowers and another with lacinatedly lobed leaves. For years it was universally believed that because Linnaeus had named it *Syringa persica* that it was a native of Persia or of some country adjacent to Persia. Meyer collecting in China in 1915 found quantities of a Lilac covering hillsides in Kansu, and plants raised from seeds of this Lilac have flowered and proved identical with the lobed-leaf form of *S. persica*. As there is no wild specimen of the Persian Lilac in any of the great herbaria collected in Persia or other parts of western Asia it is probable that the Persian Lilac is really a Chinese plant which was early carried into the western part of the continent.

The first hybrid Lilac appeared in the Botanic Garden at Rouen in 1810, and was the result of crossing *Syringa vulgaris* and *S. persica*. It is one of the most valuable of all Lilacs and grows into a bush ten feet high and broad and of rather open habit. It is very hardy and blooms freely every year, and deserves a place in every garden where Lilacs are grown. The flowers resemble those of the Persian Lilacs,

but are longer and produced in massive clusters sometimes two feet in length and so heavy that the slender branches can hardly support them; they are reddish purple, and there are forms with darker red flowers and with nearly white flowers. This Lilac, which has often been called *Syringa rothomagensis*, unfortunately through a misunderstanding of its origin, must be called *S. chinensis* if the oldest name is used for it.

Among the twenty-three species of *Syringa* introduced by the Arboretum the most beautiful to many persons is *S. pubescens*, which was first raised in the Arboretum in 1883 from seeds sent by Dr. Bretschneider from Peking. It is a tall shrub with erect stems, small leaves and broad clusters of small, pale mauve flowers with a long slender corolla-tube. For its fragrance, which is more pungent and delightful than that of any other Lilac, *Syringa pubescens* should find a place in every northern garden. Plants in the United States have failed to produce seeds and as this species has proved unusually difficult to increase by cuttings it has remained one of the rarest Lilacs in American gardens. It can be increased by grafting, and sooner or later fertile seeds will be found on some of the large plants growing in the Arboretum. Dr. Bretschneider sent to the Arboretum at the same time seeds of *Syringa villosa*, another excellent garden plant. It is a large round-topped bush from ten to twelve feet tall and wide, with large, broad, elliptic to oblong leaves, bright green and dull on the upper surface and pale below, and broad or narrow clusters of flesh-colored or nearly white flowers which have the rather disagreeable odor of those of the Privet. It blooms freely every year, and the flowers do not open until those of most of the other Lilacs have faded.

The hybrid *Syringa Henryi* was obtained by the French gardener Henry by crossing the Hungarian *S. Josikaea* with *S. villosa*. These are both late flowering species as is the hybrid between them. Plants of this hybrid are large, vigorous, perfectly hardy and grow rapidly. The leaves resemble those of *S. villosa*, but the flowers are violet-purple or reddish purple and arranged in clusters from twelve to fifteen inches long and broad. The handsomest perhaps of this race, which has been named "Lutèce," has deep violet-purple flowers and is one of the most beautiful of all Lilacs. "Eximia," another of these hybrids, has not grown here to as large a size as "Lutèce" but is one of the handsomest late flowering plants in the collection with reddish flowers which later become pink.

The greatest show of Lilacs will be at the end of the present week, but some of the species, especially the group of Tree Lilacs from China and Japan, will not be in bloom for two or three weeks.

The earliest of the Magnolias which flower after the leaves open, the American *Magnolia Fraseri*, is already in bloom, as are several of the Horse-chestnuts, including the American Ohio Buckeye, *Aesculus glabra*, and many American Hawthorns. Flowers still make some of the Amelanchiers and Plum-trees attractive, and probably the last two days of May and the first Sunday in June will see more flowers in the Arboretum than on any other days during the year.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



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JAMAICA PLAIN, MASS.

JUNE 10, 1924

Hawthorns. A large number of these trees and shrubs are now in bloom; a few have shed their petals and others will not be in flower for nearly a month. This genus is chiefly confined to eastern North America where it abounds from Nova Scotia to eastern Texas; it is rare in the western part of the continent, and only a few species have been found in Asia and Europe. In 1892, when the second volume of Sargent's *Silva of North America* was published, fourteen species, including one shrub, were described, and in the second edition of Sargent's *Manual of the Trees of North America* published in 1921 there are figures and descriptions of one hundred and fifty-three arborescent species. A few of the larger specimens are growing along the parkway wall between the Jamaica Plain and the Forest Hills entrances, but the greatest part of the collection occupies the eastern slope of Peter's Hill where several hundred species are now established. This collection was begun in 1899, and the discovery and description of most of the species, the raising from seeds here of at least fifty thousand of these plants, and the distribution of most of them to other scientific establishments and gardens in all parts of this country and Europe can perhaps be considered the greatest achievement of the Arboretum in the first half century of its existence. Many of the American species are good garden plants; most of them are hardy in New England, and they grow rapidly into usually round-topped, small trees or shrubs. They flower freely nearly every year; the fruit of many of the species is ornamental, and on a few of them it remains in good condition well into the winter or until spring. Unlike most of the genera of the Rose Family, *Crataegus* shows little or no tendency to hybridize, and among

all the plants which have been raised in the Arboretum during the last twenty-five years no individual which suggests hybrid origin has been noticed. Until the beginning of this century little attention had been paid to these plants by American botanists or gardeners. Some of the species were first named and described from plants cultivated in Europe, and one very distinct and interesting group of small shrubs, the *Intricatae*, named for a plant growing in the Botanic Garden in Copenhagen; of this group ninety species are now recognized and most of them will flower in the Arboretum during the next few days. The species of this group are most abundant in western Massachusetts and in New York, Pennsylvania and Michigan, that is in that part of the country which eighty or one hundred years ago was familiar to the most keen-eyed, industrious and systematic botanists and plant collectors which this country has produced. One hundred and fifty years ago or more, the so-called English Hawthorn, or May, was more often planted here than any of the native species, and it was with this plant that Washington struggled to make a hedge at Mt. Vernon; an excellent gardener, he probably did not realize that the seeds of *Crataegus* do not germinate until they have been allowed to remain for two years in the ground, and as the seedlings did not appear when he expected them he dug up the seed-bed and planted something else.

The two species of western Europe, *Crataegus oxyacantha* and *C. monogyna*, and many of their varieties, are established in the Arboretum. These are the only foreign species which have ever been naturalized in North America where they are now abundant in some parts of Nova Scotia. Forms of this species with scarlet and pink flowers are conspicuous and are the only Hawthorns with colored flowers. The most beautiful, however, of all the foreign Thorns known in the Arboretum is *C. pinnatifida* from eastern Siberia and northern China. The large, deeply divided leaves make this one of the handsomest of the whole genus; the flowers are large and produced in profusion. A form of this species with larger leaves and much larger fruit (var. *major*) is cultivated in orchards as a fruit tree in the neighborhood of Peking. It flowers and produces its fruit here abundantly every year.

One of the earliest, if not the earliest American species to flower, *Crataegus arnoldiana*, was discovered growing wild in the Arboretum on the wooded bank in the rear of the Bussey Institution. It grows also on the banks of the Mystic River in West Medford, Massachusetts, and near New London, Connecticut. This is one of the handsomest of the American Hawthorns and belongs to the Molles Group, which consists of trees distinguished by their large size, large early flowers which usually open with the unfolding of the leaves, and by the large, often edible, scarlet or rarely yellow fruits. That of *C. arnoldiana* ripens late in August or early in September and fruit can be found on other species of the group a little later in the year. There are several species of this tree growing from the valley of the St. Lawrence River in the Province of Quebec to Texas. They now are, however, more numerous in the region west of the Mississippi River and are almost entirely wanting in the southeastern states. In winter this tree is

easily recognized by its upright growth, and distinctly zigzag branches which are more thickly covered with spines than those of many of the related species. At the South Street entrance there are large plants of three other species of this group, *C. mollis* from the Ohio-Illinois region, *C. arkansana* from central Arkansas, and *C. submollis*, a New England and Canada tree. The flowering of all these has passed.

Of other species which have already grown to a large size in the Arboretum and proved desirable garden plants in the old collection near the parkway wall are now a number which are large enough to show their value. Among them are *C. coccinioides*, which is a round-headed tree from the neighborhood of St. Louis, with large flowers in very compact, nearly globose clusters, and large, round, red fruit ripening in the early autumn. In this collection, too, is the Cockspur Thorn, *Crataegus Crus-galli*, which has been more generally cultivated than any other American species, and is now the type of one of the most distinct groups in which the genus has been divided: *C. nitida*, a flat-topped tree with wide-spreading branches and lustrous leaves, comparatively small flowers and abundant fruit; the lustre of the leaves which turn brilliantly in the autumn and the habit of the tree make it one of the handsomest of the Thorns which can be cultivated in this climate. *C. pruinosa*, *C. aprica* and *C. succulenta* are also well represented here, and are good examples of three large and distinct groups. *C. pruinosa* is a small tree with smooth bluish green leaves, large flowers made conspicuous by the large, rose-colored anthers of the twenty stamens and globose fruit, bright green and covered with a glaucous bloom when fully grown and turning scarlet late in the autumn. In all eastern North America there are few Thorns handsomer than this. *C. aprica* is interesting as one of the few hardy representatives of the *Flavae* Group which is entirely confined to the southeastern states with a few representatives ascending into the valleys of the southern Appalachian Mountains. It is not one of the handsomest species of the group for the flowers are not so large as those of many others, and the anthers of the ten stamens are yellow. *C. succulenta* is a showy representative of the *Tomentosae* Group which is one of the handsomest of the northern groups and is especially beautiful in autumn when the branches are covered with large clusters of drooping scarlet fruit. Two black-fruited species here are the *C. Douglasii* from Washington and Oregon, and *C. rivularis* from the Rocky Mountains and the Sierra Nevada. Many of the species in the collection on Peter's Hill are already large enough to show their character and value, especially those of the *Intricatae* Group.

Early Roses. Three interesting Roses are already in bloom. The first, *Rosa Ecae*, less beautiful when in flower than *Rosa Hugonis*, is a native of Afghanistan, where it is common on dry mountain ridges, and of Samarkand, is well worth a place in a collection of Roses for the species with yellow flowers which are hardy in this climate are few in number. *Rosa Ecae* is a spiny shrub with small leaves which are delightfully fragrant throughout the season, and pale yellow flowers not more than an inch and a quarter in diameter.

Rosa Hugonis. Few plants sent from China to our northern gardens equal this Rose in grace and beauty. The long arching branchlets are so equally covered with flowers from end to end that the petals touch and make a continuous band of pale yellow. Individual flowers are about two and a half inches in diameter and have a delicate perfume. The leaves are small and pale green. Perhaps no other single-flowered rose is so beautiful, although the Cherokee Rose (*R. laevigata*) another Chinese Rose naturalized in the southern states, has handsomer foliage and larger flowers, but the flowers of the Cherokee Rose are white and not produced in such profusion. *Rosa Hugonis* has become popular in this country in a surprisingly short time and can now be found in quantity in many nurseries.

Rosa omeiensis is also in flower. It is a vigorous shrub with stems covered with prickles and pure white fragrant flowers hardly more than an inch in diameter, borne at the ends of short lateral spikes, and bright red ellipsoidal fruit on stout, elongated, yellow, fleshy stalks and very showy. This Rose is common on the mountains of western China at altitudes of six thousand to eleven thousand feet above the sea, and sometimes grows twenty feet tall and forms great thickets. The name is derived from that of one of the sacred mountains of China, Mt. Omei, where it is common. The largest plant in the Arboretum is in the collection of Chinese shrubs on the southern slope of Bussey Hill with other Roses raised from seed collected by Wilson in western China.

Horsechestnuts and Buckeyes. This is a good time to visit the collection of these trees which are grouped on the right hand side of the Meadow Road. The collection is nearly a complete one and contains all the American species and hybrids but the red-flowered *Aesculus Pavia* from the southeastern states and the Californian species which are not hardy, the two Chinese species and the species from the Himalayas. The original Horsechestnut, *Aesculus Hippocastanum*, is the handsomest of the whole genus and one of the most beautiful trees in the world. It was brought to America at least one hundred years ago and there are many noble specimens in cities and towns of the eastern states. The Himalayan Horsechestnut and the species of central China are not hardy here, and the Arboretum has not succeeded in obtaining seeds of the north China species, *Aesculus chinensis*, which will probably flourish in this latitude.

A new Crabapple. One of the most beautiful when in flower of all the trees which have ever bloomed in the Arboretum is now flowering in the Peter's Hill Group where several species of the American *Malus* are found. It is a double or semi-double form of the American *Malus coronaria* which was found a few years ago in the woods near Waukegan, Illinois, and was named the Charlotte Apple in honor of the wife of the discoverer. The Arboretum plant is still very small but would have been larger if it had not been broken down by boys two years ago. The flowers are fragrant, about two inches in diameter, with two rows of pale pink petals and far handsomer than those of the now well known Bechtel Crab, the double-flowered variety of another American species now in full bloom.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JUNE 18, 1924

Evergreen Rhododendrons. The plants called Rhododendrons which have been chiefly cultivated in Massachusetts during the past fifty or sixty years have been imported from England, where they have been immensely popular, and are usually called "Catawbiense Hybrids." They are hybrids of the Appalachian *R. catawbiense* which is perfectly hardy in New England, with handsome foliage and rather unattractive pale purple flowers, and primarily with the scarlet-flowered Himalayan *R. arborescens*. Hundreds at least of these hybrids and varieties have been raised in Europe and many can be grown in this region. They require, however, specially prepared soil, frequent and copious watering, mulching with leaves, and spraying to protect them from the attacks of the lace-leaf fly which left to itself turns the leaves brown and finally kills them. The plants are all grafted, and the only Rhododendron which has yet been successfully tried for this purpose is *R. ponticum* of the Black Sea region which is not hardy in New England. The wood of the two large-growing eastern American species which should be the natural stock for these hybrids is not available for this purpose as it is too hard. Some of these hybrids if well taken care of here live for many years, but die sooner or later owing, it is now believed, to the tenderness of the stock on which they have been grafted. It looks now as if plants obtained by layering branches of the plants grafted on *R. ponticum* would be the only way to secure permanent plants of the Catawbiense Hybrids. As it is there are no shrubs on which so much money has been spent in New England with such meagre and unsatisfactory results. The handsomest species of Rhododendron flowering in the Arboretum is the Caucasian *R. Smirnowii*,

which is now covered with large clusters of pink flowers. It is a large vigorous shrub which has been growing here for several years and has never suffered from cold nor failed to bloom. When the plant is fully exposed to the sun, however, the leaves often drop and their edges in-fold, and it does better in partial shade. The leaves are pale grayish green above, and below are thickly covered with pale felt which successfully protects them from the attacks of the lace-wing fly. The flowers are of good size and of pleasant shades of pink, and are borne in large clusters. As compared with the dark green leaves of *R. catawbiense* those of this species are less attractive. Several hybrids of *R. Smirnowii* with varieties of *R. catawbiense* have been raised in Europe, and there are a few of these in the Arboretum collection. They have proved to be good garden plants here, flowering rather earlier than *R. Smirnowii* itself and producing larger pink flowers; they have never been injured in the Arboretum, but as there is only a trace of the felt left on their leaves they will probably suffer from the attacks of the lace-wing fly.

The four species of eastern North America, *R. minus*, *R. punctatum*, *R. catawbiense* and *R. maximum* are perfectly hardy. The first is a dwarf plant from the high Appalachian Mountains with rose-pink flowers, and one of the handsomest of the dwarf Rhododendrons which can be grown in this climate. It has only been recognized in recent years but is becoming popular and can now be found in large quantities in several North American nurseries. There is a white variety which is a much less attractive plant. *R. punctatum* blooms later than the so-called Catawbiense Hybrids, and although a larger plant than *R. carolinianum* with slightly larger pink flowers is not as good a garden plant for the flowers, like those of *R. maximum*, are hidden by the shoots of the year which rise above them. Comparatively few seedlings of *R. carolinianum* have ever been raised and apparently not much attention has been paid to selecting from the plants growing on the high Appalachian peaks individuals with flowers of unusual colors. It is perhaps the hardiest of all Rhododendrons; the habit is excellent, and the leaves are handsomer than those of the other hardy species. Improvement in the color of the flower is all that is needed to make it a first-rate plant for this climate. Experiments with seedling plants of this species are certainly worth making. *Rhododendron maximum* is the most northern of the eastern North American Rhododendrons and is not rare in some parts of New England. In the valleys of the southern mountains it is sometimes a bushy tree up to forty feet in height, but in the north it is much smaller, and is distributed in isolated stations from Nova Scotia through New England and eastern New York to Pennsylvania; from Pennsylvania southward along the Appalachian Mountains it is very abundant at low altitudes, often covering the slopes of narrow valleys with impenetrable thickets. The flowers are white or pale rose color and produced in rather compact clusters which as the flowers do not open until late in June or early in July are a good deal hidden by the branches of the year which rise above them. The long comparative narrow leaves sometimes a foot in length make this Rhododendron valuable in a climate in which few broad-leaved evergreen plants can be successfully grown.

Rhododendron caucasicum is a dwarf, white-flowered species which is still little known in this country. The variety called Boule de Neige is much used in Europe as a stock plant for its varieties and hybrids, and is growing in the Arboretum. Another variety or hybrid about which we practically know nothing beyond the fact that it is hardy and one of the most beautiful of all dwarf Rhododendrons is called Mont Blanc. The flowers of this are pink when they open but soon turn pure white. In 1908 the Arboretum imported from T. J. Seidel, the well known nurseryman at Schwepnitz, near Dresden, a set of Rhododendrons which are the most promising hybrids which have ever been in the Arboretum where practically nothing is known about their origin except that they show evidences of the blood of *R. caucasicum*. They are dwarf compact plants which bloom every year a week or ten days earlier than the Catawbiense Hybrids and are perfectly hardy. No indication of their parentage is given in the names which are: Adalbert, Adam, Alarich, Albert, Annedore, Arno, Attila, August, Anton, Bella, Bismarck, Boule de Neige, Calliope, Daisy, Desiderius, Diana, Donar, Echse, Eli, Eva, Fee and Viola. We do not know of any plants under these names except those in the Arboretum, and an effort will be made to find out from the raiser their parentage. Although much smaller both in the size of the flower-clusters and that of the plant, they are much more satisfactory in this climate than any of the Catawbiense Hybrids. Unfortunately they can no longer be imported from Europe, but it may be possible to obtain stock on which they can be propagated, and of course good varieties may be obtained from seeds. On the whole this race is the most promising for New England and best worth the attention of growers. Many of the varieties are still in flower and others are fading.

Lonicera Maximowiczii var. *sachalinensis*. Although this shrub has been known to science for a number of years, it was introduced into cultivation by Wilson who collected seeds at the base of the Diamond Mountains in northern Korea in August, 1917, where it grows as a shrub four or five feet high with erect branches. It is distinguished from the better known *Lonicera Maximowiczii*, which is widely distributed through northeastern Asia and has been an inhabitant of the Arboretum for many years, by its leaves which are bright red as they unfold and glaucous and glabrous on the lower surface. Last year it had a few flowers but this year the plant in the Shrub Collection is covered with its scarlet, long-stalked flowers which will be followed by red fruit. This as it is growing this year is one of the handsomest of the new introductions and a plant which should be known to the lovers of beautiful shrubs.

Lonicera Maackii, which is a native of northern China, is covered just now with its large white flowers, and in bloom is a handsomer plant than the variety *podocarpa* discovered by Wilson in western China. This is almost a tree with small white flowers but brilliant red fruit which ripens while the leaves are still green in the autumn, the green leaves making a beautiful contrast with the fruit, and for autumn decoration make it one of the most desirable of all fruit-bearing small trees or shrubs. The largest plant in the collection is among the Chinese plants on the southern slope of Bussey Hill.

Another Asiatic Honeysuckle, *Lonicera Morrowii* of the Amour region in eastern Siberia, is a plant of great decorative value if sufficient space for its development can be provided for it. It has gray-green foliage, comparatively large yellowish flowers and bright red fruits. It is largely planted in the Boston Parks and in Franklin Park there are specimens which are twenty feet across and probably ten or twelve feet high. Like other Bush Honeysuckles, *L. Morrowii* hybridizes easily with other species, and most of the plants raised from seeds now sold by American nurserymen under this name are hybrids of this species with *L. tatarica* and are erect-growing plants of little value for those who want plants with the peculiar habit of *L. Morrowii*.

Two trees which add beauty and interest to the Arboretum at this time are two Viburnums, the eastern American Viburnums, *V. prunifolium*, which is already dropping its flowers, and *V. Lentago*, a bush-like tree sometimes thirty feet high. Not many small trees are more useful than these American Viburnums for the decoration of American parks and gardens, and nurserymen fortunately recognize this fact and now grow them in large quantities, especially *V. Lentago* which is the more northern species of the two. The flowers of *V. prunifolium* are whiter than those of *V. Lentago* which are faintly tinged with yellow, but the flower-clusters and leaves of the latter are larger. *V. prunifolium* is more apt to grow with a single trunk than *V. Lentago* which is often a large arborescent shrub and is a more southern species.

Magnolia Watsonii is a shrub first found in a Japanese nursery and is unknown as a wild plant. Its relationship is with *M. parviflora*, a small Japanese tree which grows as far north as Korea. The Arboretum has plants raised from seeds gathered in Korea by Wilson which have not yet flowered but which ought to be hardier than the Japanese plant which is not very satisfactory here. *M. Watsonii* has usually not been hardy in the Arboretum but this year there is a plant on Hickory Path near Centre Street covered with blossoms which are extremely fragrant, differing in this from *M. parviflora*, and in its larger flowers and shorter flower-stalks. When better known it may prove to be only a variety of *M. parviflora*.

Daphne genkwa is one of the beautiful shrubs discovered by Wilson in western China. It is not a success in eastern Massachusetts but this year there is a plant in the Arboretum with a few flowers. On Cape Cod and Long Island it grows into a fine shapely round-topped bush with bluish fragrant flowers which are followed by yellow fruit. It is still very rare in gardens. If the fruit on the few plants known in the United States is distributed in good hands it should in the course of a few years be common on Cape Cod and southward.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JUNE 24, 1924

Catawbiense Hybrid Rhododendrons. The first of the so-called Catawbiense Hybrids was raised in England in 1826, between *Rhododendron catawbiense* and *R. arboreum*, and was named *R. alta-clerense*. It is doubtful if this plant is still in existence. There are forty-eight varieties of the Catawbiense Hybrids growing in the Arboretum raised at Knaphill Nursery, Woking, Surrey, England, by Anthony Waterer who by his exhibit at the Centennial Exhibition in Philadelphia did more to make these plants known in this country than anyone else. At this Exhibition fifteen hundred plants in eighty varieties were arranged under the general charge of Mr. Anthony Waterer himself who came to America for that purpose. Most of these plants were presented to Professor Sargent, and a large part of his visit was passed in Boston where he learned that it is as easy to acquire a serious attack of gout in New England as it is in England. As a rule persons like to make collections in this country of many kinds of these Rhododendrons, but much better results are obtained by confining collections to not over a dozen varieties and by planting several individuals of each of these varieties together. Twelve varieties recommended by the Arboretum, where they have been growing uninjured for about thirty years, are: H. W. Sargent (crimson), Album elegans, Album grandiflorum, Catawbiense album (white), James Mackintosh (red), Mrs. C. S. Sargent (rose), Purpureum grandiflorum (dark purple), Roseum elegans (rose pink), Henrietta Sargent (rose), Charles Dickens (bright red), Everestianum (rosy lilac), and atrosanguineum (dark red).

Rhododendron delicatissimum is a hybrid between *R. catawbiense*

and *R. maximum* which was raised by Anthony Waterer and has been in this country since 1871; it has proved to be one of the best of the large-growing Rhododendrons ever cultivated here. It is a large, round-topped shrub with narrow pointed leaves and flowers the color of apple blossoms; it blooms about a week later than the Catawbiense Hybrids and the flowers have just opened.

Rhododendron Watereri is an interesting hybrid raised by Anthony Waterer and was sent to the Arboretum in 1908 without a name and has been named here for him. It was obtained by crossing *R. Metternichii* with one of his Catawbiense Hybrids and has proved perfectly hardy in the Arboretum where there are four fine plants. The young shoots of this plant are clothed with gray to gray-brown floccose tomentum, early becoming glabrous; the leaves when young are covered with short, curled hairs and on the under side with a short, dun-colored felt, later becoming glabrescent. It has pale to deep rose-pink flowers. The habit of the plant and the character of the young shoots and leaves strongly suggest *R. Metternichii*, while the broader leaf-base and glabrescent foliage recall *R. catawbiense*. The flower-truss is compact and rounded, and the flowers although not large are numerous and of pleasing shades of pink. It has proved perfectly hardy and of vigorous habit, and promises to be a useful plant for New England. The presence of a felt of hairs on the under side of the leaves is a decided advantage to any Rhododendron in New England since it protects it from the lace-wing fly which attacks most of these plants. *Rhododendron Metternichii* is a shrub from three to twelve feet high with numerous stout branches, oblong-lanceolate to oblanceolate leaves, wide, rounded, obtuse or short-cuspidate, narrowed or rarely rounded at the base and dark, lustrous, green and glabrous on the upper surface and densely clothed with floccose to crustaceous gray to rufous-colored tomentum below. The flowers are pink, in loose umbellate corymbs, on slender pedicels with a seven-lobed corolla, from ten to fourteen stamens shorter than the corolla and puberulous to pubescent filaments below the middle and shorter than the pistil. This is the common evergreen Rhododendron of Japan and is not known to grow wild outside of that country, and does not extend into the northern island of Hokkaido or into northern Hondo. In the Nikko region, on Mt. Fuji and the mountains of Shinano, it is particularly abundant at altitudes of between 3000 and 7000 feet, and from the middle of May to the end of June, according to altitude, is one of the floral features of the forest. It is hardy in the Arboretum but grows slowly.

Kalmia latifolia, the Mountain Laurel, at the northern base of Hemlock Hill, will be in bloom shortly after this number of the Bulletin reaches its Massachusetts readers. All the plants are not as full of flower-buds as they were last year, but the flowering of the Laurel is the last of the great flower shows of the year in the Arboretum; none of those which precede it is more beautiful. The Mountain Laurel, or Calico Bush as it is often called, is one of the most beautiful of all North American shrubs or small trees. Many of the Rhododendrons have larger leaves and larger and more brilliantly colored flowers, but of all the broad-leaved evergreen plants which can be grown success-

fully in this climate the Laurel is perhaps the most satisfactory. It is not perhaps strange that so little attention has been paid to it by American gardeners, for those of the earlier generations at least derived their inspiration almost entirely from England and usually despised American plants as too common for their attention. Now that it is impossible under Federal regulations to import plants with soil at their roots the Laurel will probably become much more generally used in this country than it has ever been before. No hybrids have yet been raised and the only distinct forms are natural ones. Of these there are plants with pure white flowers (var. *alba*), and one with deep pink-red flowers and dark leaves (var. *rubra*). Between these extremes there are others with all shades of pink, and there is one with flowers conspicuously marked by a chocolate band (var. *fuscata*). There is a dwarf form (var. *myrtifolia*) with small leaves and small clusters of minute flowers; and there is one in which the corolla is deeply divided into narrow lobes (var. *polypetala*). A form with broad, handsome Rhododendron-like leaves (var. *obtusata*) rarely flowers, and another with a six-lobed corolla has recently been found on the Blue Ridge in North Carolina. The Laurel Collection is easily reached from the Walter Street and South Street entrances of the Arboretum, and persons interested in a beautiful floral display should not fail to see it.

A few interesting plants are growing among the Laurels at the northern base of Hemlock Hill, including the only plant in the Arboretum of the American *Ilex opaca*, the largest specimen of *Abies grandis* from the northwestern part of the country, the best plant in the Arboretum of the Japanese *Tsuga diversifolia*, as well as a group of the Sour Wood (*Oxydendron arboreum*). Here, too, can be seen the best plant of the Japanese *Torreya* in the Arboretum. Across the road from the great bank of Hemlocks are many interesting plants, including among others the largest plants of the Japanese Yew in the Arboretum, and of the native Inkberry, the evergreen *Ilex glabra*. The Inkberry is a common shrub in the coast region from New Hampshire to Texas. It has been established in the Arboretum for many years but occasionally in severe winters loses here the ends of some of the branches and many of the upper leaves. It soon recovers and must be considered one of the best evergreen shrubs which can be grown in New England. The best plants of the prostrate form of *Juniperus chinensis Sargentii* are growing also in this border, as well as the best specimen of *Leucothoe floribunda*. Here, too, is the Sheep Laurel (*Kalmia angustifolia*), a red-flowered dwarf species common in northern pastures.

Rosa spinosissima, Scotch Roses, are now in bloom in the Shrub Collection. The handsomest perhaps is the variety *altaica* with petals faintly tinged with yellow toward their base, the varieties *hispida* and *lutea* with yellow flowers, and the variety *fulgens* with pale pink flowers; these are all single. Other varieties in the Arboretum are *cectiflora* and *pusilla*. From the gardens of the Duke of Dalkeith, near Edinburgh, the Arboretum received a few years ago a collection of Scotch Roses for which this garden was once famous; these are Jupiter with pale pink single flowers, Lady Baillie with small yellow flowers, Dominie Samson, King of the Scots, Plato, Pythagoras and Iris.

Laburnum alpinum. The large plant of this *Laburnum* on the right hand side of the Forest Hills Road just below the Forest Hills entrance is covered again with its long racemes of clear yellow flowers which has shown here for many years its value for northern gardens. *L. alpinum*, which is a native of the elevated regions of southern Europe, is usually spoken of as the "Scotch Laburnum" probably because it is a favorite in the gardens of north Britain. In those of northern New England it is extremely rare. It is hardier than *L. vulgare*, or as it is now called *L. anagyroides*, a small tree with shorter racemes of flowers. This has been a good deal planted in the eastern states, and at the north is not always hardy. Occasionally a good specimen can be seen in the neighborhood of Boston. There are several varieties of this *Laburnum* which have not, however, grown well in the Arboretum. A better plant for New England than *L. vulgare* is its hybrid with *L. alpinum*, known as *L. Watereri* or *L. Parksii*. This is a small tree, and when in flower the handsomest tree with yellow flowers which can be grown in this climate. It blooms about two weeks earlier than *L. alpinum*.

Cornus alternifolia. This is the handsomest native Dogwood with the exception of *Cornus florida*, and it has for some reason or other proved very difficult to grow, but fortunately is represented by several good native specimens growing in the Arboretum. It differs from all the other American Dogwoods as it has alternate leaves and branches. Fortunately the Chinese species, *Cornus controversa*, has proved easier to grow and is a plant of first-rate merit.

Cornus controversa is a widely distributed tree in Japan, Korea and western China. Wilson photographed in Szech'uan a specimen sixty feet high with a trunk seven feet in girth. In the *Cornus* Collection on the right hand side of the Meadow Road are plants raised from seeds collected by Wilson in western China in 1907 and these are now in bloom. The largest of these trees is in the Peter's Hill Nursery. This plant was sent here in 1913 by the Park Department of the City of Rochester, New York. It is now about twenty-five feet high with a short trunk and a head twenty-six feet in diameter. The branches are long, crowded and spread at right angles with the stem, drooping slightly at the ends, the lowest sweeping the ground. The upper side of the branches is thickly covered with flat flower-clusters six or seven inches in diameter and raised on erect stems. The flowers are white or white faintly tinged with yellow and are followed by black, shining fruits which are eaten by the birds as fast as they ripen. As it grows on Peter's Hill this *Cornus* is a magnificent plant and the handsomest of the species in the Arboretum, with the exception of the species with white floral bracts represented here by *C. florida* and *C. kousa*. To the student of botanical geography *C. controversa* is interesting as a living witness of the relationship between the floras of eastern Asia and eastern North America, for in the genus *Cornus* with many species there are but two with alternate leaves, *C. controversa* common in eastern Asia, and *C. alternifolia* in eastern North America.

ARNOLD ARBORETUM

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Deutzias. If all the species and hybrids of *Deutzias* are considered this genus is not a great success in this region where many of the plants are not hardy and others only flourish in exceptionally sheltered and favored positions. Much attention has been paid to hybridizing species of this genus, and probably the most useful *Deutzia* for this part of the world is a hybrid between the Japanese *D. gracilis* and the Chinese *D. parviflora*. *Deutzia gracilis* is a dwarf shrub with pure white flowers in erect or spreading racemes. This is an old and popular garden plant better worth growing in the southern and middle states, however, than it is in Massachusetts where the ends of the branches are often more or less killed. *D. parviflora* is a large, vigorous and hardy shrub with flowers in compact, many-flowered corymbs. It is a native of northern China and Mongolia. A hybrid between these two species was made by the French hybridizer Lemoine many years ago and has been called *D. Lemoinei*. It is a large shrub sometimes five or six feet high and broad which covers itself with large clusters of pure white flowers. Handsome and more compact varieties of this hybrid are the varieties *compacta*, *Boule de Neige*, *Avalanche* and *Candelabre*. Varieties of another of the Lemoine hybrids called *Deutzia rosea* sometimes flower well and promise to be good garden plants in sheltered positions. This hybrid was obtained by crossing *D. gracilis* and *D. purpurascens*; the latter has petals which are purple on the outer surface and is usually not hardy here. *D. rosea* and its varieties have flowers more or less tinged with purple. Another hybrid obtained by the same cross by Lemoine called *D. myriantha* has white flowers, and its varieties called *Boule Rose* and *Fleur de Pom-*

mier are handsome and apparently hardy plants with flowers tinged with red.

Deutzia scabra, a native of Japan and China, is one of the hardiest and most generally cultivated of all Deutzias. It is a tall shrub with reddish branches, rough leaves and erect clusters of white flowers sometimes flushed with rose. This is the Deutzia of old gardens north and south. The variety *crenata* has brown branches and smoother leaves, and although less common in gardens appears to be equally hardy. The variety *Watereri* has flowers tinged with red on the outer surface of the petals. There is a variety *plena* with double flowers with petals tinged with rose color. The variety "Pride of Rochester" has flowers tinged with rose and is one of the handsomest of the group. *Deutzia grandiflora* is the first of the genus to flower here. Although known known to botanists since 1832 it has only recently found its way into gardens through the agency of the Arboretum.

Philadelphus. Gardens owe much to this genus. In those of New England of more than a century ago it was one of the chief ornaments, and a few old-fashioned Roses, with the Syringa or Mock Orange (*Philadelphus coronarius*) were loved and carefully tended; in modern gardens there are few shrubs which produce more beautiful flowers than some of the Syringas. There are now established in the Arboretum some thirty species of Philadelphus and a large number of varieties and hybrids. All these plants, popularly called Syringas, are easy to propagate, demand no special care and suffer less from the attacks of insects than most trees and shrubs. They bloom freely every year, their flowers are often very fragrant, and in rich, well-drained soil the plants live for a long time. Some of the species can grow under the shade of overhanging trees, and flower in such situations more freely than almost any other shrub. The beauty of all these plants is found in their white flowers; the fruit, which is a dried capsule, has as little beauty as that of the Lilac, and there is nothing particularly distinct or interesting in the habit of the plants of any of the species; the leaves fall in the autumn without coloring. As flowering shrubs, however, not many surpass them in beauty, and their beauty is increased by the length of their flowering season which lasts in the Arboretum six weeks. The first Philadelphus to bloom here opened its flowers several week ago. It is a native of Korea and is named *P. Schrenkii* var. *Jackii* as it was discovered by Professor Jack during his travels in Korea. It is a tall narrow shrub with erect stems and flowers of medium size, and is of no exceptional value as an ornamental plant. Almost as early to flower is *P. hirsutus* from the southern Appalachian Mountain region of North America. This is one of the smallest flowered species, and in the Arboretum is a large loose-growing shrub of unattractive habit and of comparatively little value as a garden plant. It is to be regretted that the Syringa of old gardens (*P. coronarius*) has been pushed aside by newer introductions and has become comparatively rare in the gardens of this part of the country, for the flowers of no other Syringa have a more delicate and delightful fragrance. This plant, which is a native of southeastern Europe, reached England before the end of the sixteenth century, and was probably one of the

first shrubs which emigrants brought with them to this country. Among the American species which should find a place in all gardens are *P. inodorus*, *P. pubescens* and *P. microphyllus*. The first is a native of the Appalachian Mountain region and grows to a height of six feet; it has arching branches and large, pure white, cup-shaped, solitary, scentless flowers. By some persons it is considered the most beautiful when in bloom of the whole genus. *P. pubescens*, often called *P. grandiflorus* or *P. latifolius*, is also a plant of the southern Appalachian region. This sometimes grows to the height of twenty feet, with stout, erect branches, broad leaves and slightly fragrant flowers in erect five- to ten-flowered racemes. This plant is more common in gardens than the last, and when it is in bloom it makes a great show. *P. microphyllus*, which rarely grows more than three feet tall, has slender stems, and leaves and flowers smaller than those of any *Philadelphus* in cultivation. What the flowers lack in size, however, is made up in fragrance which is stronger than that of any other *Syringa*. The most distinct and handsomest of the Asiatic species in the Arboretum is *P. purpurascens*, discovered by Wilson in western China. This is a large shrub with long arching stems from which rise numerous branchlets from four to six inches long and spreading at right angles; on these branches the flowers are borne on drooping stems; they are an inch and a half long, with a bright purple calyx and pure white petals which do not spread as they do on most of the species but form a bell-shaped corolla and are extremely fragrant. This certainly must be numbered among the handsomest shrubs brought from western China by Wilson to the Arboretum.

Philadelphus pekinensis from northern China and Mongolia is a stout shrub rather broader than high which every year produces large quantities of small flowers tinged with yellow. Another interesting garden plant is *P. Falconeri* which is certainly Asiatic and probably Japanese; it has narrow lanceolate leaves and fragrant flowers in from one- to six-flowered racemes. The origin and history of this plant are not known. Some of the species hybridize freely, and several of the handsomest of the *Syringas* are hybrids. One of the first of these hybrids to attract attention was raised in France before 1870 by Monsieur A. Billard and is known as *P. insignis* and is sometimes called "Souvenir de Billard." It is one of the handsomest of the large growing *Syringas*, and the last or nearly the last to bloom in the Arboretum. The flowers will not be open for nearly another month. A hybrid probably between *P. grandiflorus* of the Appalachian Mountain Region with a species from our northwest coast appeared in the Arboretum a few years ago and has been called *P. splendens*. It is a large and vigorous shrub with unusually large flowers, and one of the handsomest of the *Syringas* in the collection. *P. maximus*, a supposed hybrid of *P. latifolius* from the southeastern United States and *P. tomentosus* from the Himalayas, grows to a larger size than any other of these plants. It is not rare in Massachusetts gardens in which plants from twenty to thirty feet high can occasionally be seen.

The crossing about thirty years ago by Lemoine of *P. coronarius* with *P. microphyllus* has produced an entirely new race of *Syringa*

which has proved to be one of the best additions to garden plants which has ever been made. The first plant obtained by this cross was called *P. Lemoinei*; it is a perfectly hardy shrub from four to six feet high and broad, with slender stems which bend under the weight of the countless flowers which are intermediate in size between those of the parents and retain the fragrance of those of *P. microphyllus*. There are at least a dozen distinct forms of this hybrid made by Lemoine, varying considerably in the size of the flowers and in the time of flowering. One of the handsomest of these plants, perhaps, is called *Candelabre*, which is a dwarf with flowers larger than those of either of its parents, an inch and a half wide, with petals notched on the margins and without the fragrance of its parents. Other distinct forms equally hardy and handsome are *Avalanche*, *Boule d'Argent*, *Bouquet Blanc*, *Erectus*, *Fantasie*, *Gerbe de Neige* and *Mont Blanc*.

Neillia sinensis. This is the only member of a genus of the Rose Family related to *Spiraea* which has flowered in the Arboretum. It is a native of western China where it was collected by Wilson and introduced into cultivation through the Arboretum. It is a tall hardy shrub with gracefully spreading and drooping branches, light green, incisely cut, pointed leaves from an inch and a half to two inches long, and clear pink flowers about half an inch in length, in short terminal racemes. It is one of the handsomest and most interesting of the hardy shrubs introduced by Wilson from western China.

Rosa Marretii is blooming remarkably this year. It is a tall, broad shrub with arching stems, pale green leaves and large pink flowers. It is a native of northern Hokkaido and of Saghalin where it was discovered by the late Abbé Faurie who sent seeds to the Arboretum in 1908. This plant, which is still rare in cultivation, promises to be a good addition to the single-flowered Roses which can be successfully grown in this climate. One of the hardiest and best growing of the new Roses, *Rosa bella*, was raised at the Arboretum from seeds collected by Purdom in northern China, and is a plant which when better known will be popular. It is a large shrub with bright red flowers an inch and a half in diameter, and bright red fruit. It is with the other Chinese plants on Bussey Hill.

Rosa multiflora cathayensis is again covered with its great clusters of pink flowers and expanding flower-buds. The Chinese representative of the white-flowered *R. multiflora* of Japan, it is one of the most beautiful Roses and interesting as the wild type from which the Chinese derived the now well known Crimson Rambler Rose and another old-fashioned garden Rose, the Seven Sisters Rose (*R. multiflora platyphylla*).

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Cornus kousa. This is the Asiatic representative of the Flowering Dogwood of the eastern states (*Cornus florida*) and of the Flowering Dogwood of the Northwest (*Cornus Nuttallii*). *C. kousa* was one of the Japanese plants which reached the United States in the early years of Japanese plant introduction into this country, and although it has never become common in American gardens it is occasionally seen in those of Boston and New York. The white bracts which surround the head of flowers and are a conspicuous feature of all the Cornels of this group are narrowed and placed further apart on *C. kousa* than on the eastern Flowering Dogwood, and are long-pointed and not, as in the American plant, rounded or emarginate at the apex. On the American plant the end of the bract is often discolored, while in the Asiatic plant the bracts are pure white to the tips. The flower-buds of *C. florida* are often killed in Massachusetts in severe winters but the extreme cold of recent years has not injured those of *C. kousa*. The Japanese plants bloom several weeks later than *C. florida* and when the leaves are nearly fully grown. In Japan it sometimes becomes a small tree with a single trunk; in this country, so far as we have observed, it grows always as a shrub with several erect stems. In central China *Cornus kousa* was found by Wilson, and a plant from his Chinese seed is well established among the Chinese plants on the southern slope of Bussey Hill where it is now a shrub about twelve feet high with numerous erect stems. It is handsomer than any of the Japanese forms with longer and broader floral bracts often overlapping below the middle. In the Arboretum the head of bracts is sometimes four and a half inches broad and in China Wilson measured them five inches across.

On a Japanese plant the heads of bracts here are rarely three and one half inches in diameter. The Chinese plant flowered first in the Arboretum in 1917 and the flower-buds have never been injured by cold. It is blooming more freely than ever before and is an object of great beauty. In China it grows as a small tree with a trunk sometimes a foot in diameter and there is no reason probably why it cannot be trained as a tree in this climate. The fact that it blooms when the leaves are nearly fully grown adds to the value of this Asiatic Cornel, and it is certainly when in flower one of the most ornamental small trees or shrubs found by Wilson in China. On the American plants the scarlet fruits are gathered in an erect head and are not united as in the Asiatic plants. This habit of the fruit adds to the beauty of the plant in the autumn when the leaves assume the brilliant colors of those of the eastern American plant. The Chinese form of *C. kousa* fruits freely in the Arboretum, and there is no reason why it should not become common in American gardens where it certainly should be one of the handsomest of the plants recently introduced into this country by the Arboretum.

Cornus rugosa. Attention is called again to the value of this common native shrub for the decoration of parks and gardens where, like many other eastern American shrubs, it is rarely seen. *C. rugosa* or *C. circinnati*, the name by which it is best known, is a shrub sometimes ten feet high which with plenty of space spreads into broad thickets. The young branches are green blotched with purple, becoming purple as they grow older. The leaves are broad, sometimes nearly circular and dark bluish green; the flowers are ivory white, in compact clusters, and are followed in the early autumn by bright blue or nearly white fruits. This Cornel has been much planted in the Arboretum and has been greatly improved by cultivation.

Hydrangea petiolaris. The specimen of this vine, the Japanese Climbing Hydrangea, on the southeastern corner of the Administration Building, is one of the great sights of the Arboretum at this season of the year when it is covered with flower-clusters from the ground to the eaves of the building. The leaves of few plants unfold here as early in the spring, and there is but one other climbing plant with conspicuous flowers really hardy in this climate, *Schizophragma hydrangeoides*, able to attach itself to a brick or stone wall or to the trunk of a tree. The flower-clusters of the Climbing Hydrangea are surrounded by a circle of white sterile flowers from eight to ten inches in diameter; they are terminal on short lateral branches which stand out from the main stem of the plant and give it an irregular surface which adds to its beauty and interest. This Hydrangea was first raised at the Arboretum in 1878 and can now be occasionally seen in American gardens. It might be better known and more generally used for there is no other plant so well suited to cover the brick or stone walls of buildings in the northern United States. *Schizophragma hydrangeoides*, which is also a native of Japan, can be seen on the wall of the Administration Building next to the Climbing Hydrangea where it blooms later. Several Chinese shrubby species of Hydrangea open at this time their flowers which are arranged in broad flat-topped clusters surrounded by a ring of large pure white ray flowers. The best known

of these, *H. Bretschneideri*, is a native of the mountains near Peking and was first raised in the Arboretum twenty-five years ago; it is a vigorous hardy plant with dark green leaves, and one of the best shrubs which flower here after the middle of June. Closely related to it are *Hydrangea xanthoneura* and its varieties *Wilsonii* and *setchuenensis*, and *H. Rosthornii* raised here from seed collected by Wilson in western China. These plants are hardy and can now be seen covered with flowers in the collection of Chinese shrubs on the southern slope of Bussey Hill. As garden plants they do not appear to be superior to *H. Bretschneideri*.

Sophora viciifolia. There are not many shrubs with blue flowers which are hardy in this climate and none of them are as satisfactory as this *Sophora*. It is a native of central and western China where it is a common shrub in dry hot valleys. In the Arboretum it is a shapely plant about four feet high and perfectly hardy, producing freely its small blue and white pea-shaped flowers. It is one of the most attractive of the small shrubs introduced by Wilson from China, and it can now be seen in bloom on Hickory Path near Centre Street.

Syringa Sweginzowii is considered by many persons the most beautiful of the new species of Lilac introduced into gardens from China in recent years. It is a tall narrow shrub with dull green leaves and narrow clusters of fragrant flowers half an inch long, flesh-colored in the bud, and becoming nearly white when the flowers open. This species blooms freely as a small plant, and is perhaps the most attractive of the new Lilacs, although the flowers are not as fragrant as those of *S. pubescens* which has been an inhabitant of the Arboretum for nearly a quarter of a century. It has the merit of being almost the last of the Lilacs in the Arboretum to bloom and it should be much better known than it is now.

Syringa reflexa, which is perhaps the most distinct and certainly one of the most beautiful of the Lilacs recently discovered, has been blooming more freely than usual this year. The flower-cluster is compact, cylindric, unbranched, from an inch to an inch and a quarter in diameter, long-stalked, arching and reflexed. The flowers are deep rose color in bud becoming nearly white, with a long slender corolla-tube, and have a more disagreeable odor than those of *S. villosa*, to which this species and *S. Komarowii* are closely related, as shown in its ample leaves dark green on the upper surface and somewhat pale and slightly hairy on the lower surface. *S. Komarowii* differs from *S. reflexa* in the large, long-branched flower-clusters which are erect, spreading or nodding, and sometimes eighteen inches long and twelve inches across.

Syringa villosa. Of the comparatively late flowering Lilacs none perhaps is more valuable than *S. villosa* which was raised at the Arboretum nearly forty years ago and has now been carried into many American gardens. It is a tall round-topped shrub with large leaves and compact, broad or narrow clusters of pale rose-colored or nearly white flowers which unfortunately have the disagreeable odor of Privet flowers. In spite of this disagreeable odor of the flowers this Lilac is a first-rate garden plant, and particularly valuable because it does not

begin to bloom until most of the varieties of the common Lilac have faded. It also promises to be a successful parent in producing new forms by crossing it with varieties of the common Lilac. It has already produced in France by crossing it with the Hungarian *S. Josikaea* a race of beautiful hybrids to which the name of *S. Henryi* has been given. One of the handsomest of these hybrids, *S. Lutèce*, covers itself every year with large open clusters of red-violet flowers and is perhaps one of the handsomest of all Lilacs.

Spiraea Veitchii is the last of the white-flowered Spiraeas to bloom here. It is a shrub as it grows in the Arboretum from eight to ten feet high with numerous slender stems and gracefully arching branches which by the middle of July are covered from end to end with broad flower-clusters raised on erect stems. It is one of the best plants introduced by Wilson from western China, and by many persons it is considered the handsomest of the genus as it appears in the Arboretum.

Brooms. By moving them from the low ground of the Shrub Collection to the comparatively dry warm border on the southern slope of Bussey Hill it has been shown that a much larger number of species can be successfully grown in this country than was formerly supposed when only a few of these plants were cultivated in the Arboretum. There are now at least a dozen species and varieties of these plants well established on Bussey Hill and many of them have flowered profusely this year.

Tree Lilacs. As the flowers of the late flowering group of Lilacs fade the earliest flowers of the so-called Tree Lilacs begin to open. There are three of these Lilacs which bear large clusters of white or yellowish white flowers which have the disagreeable odor of the flowers of the Privet, and, like those of the Privets, the leaves fall in the autumn without change of color. The first of these plants to bloom, *Syringa amurensis*, a native of eastern Siberia, is a shrub twelve or fifteen feet high, with dark close bark, broad thick leaves dark green above and pale below, and short, broad, unsymmetrical flower-clusters. *S. pekinensis* flowers next; this is also shrubby in habit, sometimes twenty feet tall and broad, with stout spreading stems covered with yellow-brown bark separating readily into thin flakes like that of some of the Birch-trees, dark green narrow pointed leaves, and short unsymmetrical flower-clusters usually in pairs at the ends of the branches. This species holds its leaves later in the autumn than the others and produces great clusters of flowers every year; the other species usually flower abundantly only every other year. The last of the Tree Lilacs to flower, *S. japonica*, is a native of northern Japan, and is generally a tree sometimes forty feet high, with a tall straight trunk covered with lustrous brown bark, like the bark of a Cherry-tree, a round-topped head of upright branches, broad, thick, dark green leaves, and erect mostly symmetrical flower-clusters from twelve to eighteen inches in length. It is one of the handsomest of the small trees which bloom here at the end of June or early in July, and appears to be more common in cultivation now than the other species of this group. These three plants can be seen growing on the bank in the rear of the path which leads through the Syringa Collection.

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Cornus racemosa. This northern Cornel has been largely used in the Arboretum in roadside plantations and is now conspicuous as the plants are covered with their small clusters of creamy white flowers. These later in the season will be followed by white translucent fruits borne on bright red stalks. Often called *Cornus paniculata*, it is a large-branched shrub six or seven feet high, with gray smooth branches, pointed leaves acute at the base, whitish below and glabrous. It is widely distributed from Maine to Ontario, Minnesota and southward. This Cornel is perhaps the handsomest of the American species with the exception of *Cornus florida*. It has lately been the most conspicuous plant in the Arboretum. It blooms here with some of the native Roses, especially with *Rosa virginiana*, the pink flowers of which compose perfectly with the white flowers of the Cornel. When these plants are used together, as along some of the Arboretum roads, delightful effects are obtained.

Cornus arnoldiana is evidently a natural hybrid between two American species, *C. racemosa* and *C. obliqua*, which appeared several years ago in the Arboretum and is now a large shrub with erect stems and characters intermediate between those of its supposed parents. Flowering a little later than *C. racemosa* it is now covered with flowers. The fruit, which is usually less abundant than the flowers, is white or bluish white. Interesting to students of plants, as are all natural hybrids, *C. arnoldiana* is not superior as a garden plant to *C. racemosa* except perhaps in its greater size.

Cornus amomum. It is useful perhaps to call attention again to the Silky Cornel, *Cornus amomum*, for it is one of the best of all shrubs to plant in this climate near the banks of streams and ponds where large masses of foliage are desired to spread out over the surface of the water. Examples of this use of this Cornel can now be seen at two of the small ponds near the end of the Meadow Road where this Cornel is now covered with flowers which will be followed in autumn by bright blue fruits; during the winter the purple stems are attractive. The Silky Cornel is a good plant also to place in front of groups of trees and shrubs but it must have room for the free growth of its wide-spreading branches, for when crowded by other plants the branches become erect and all the character and beauty of the plant is lost. A space of not less than twenty feet in diameter is necessary for the development of a handsome specimen.

Zenobia pulverulenta is just opening its flowers. This shrub of the Heath Family is a native of the coast of North Carolina where it grows along the borders of swamps and, one of the most beautiful shrubs of the American flora, is perfectly hardy in Massachusetts where it has flourished in the Arboretum for many years. *Zenobia* is related to the *Andromedas* and is chiefly distinguished by its open, campanulate and four-awned anthers. The leaves are deciduous, thickly covered with a glaucous bloom, and the ivory white flowers about half an inch long and broad are borne on slender arching stems and are arranged in axillary clusters forming terminal racemes from twelve to eighteen inches in length and arching from the upper part of the branches of the previous year. The form of *Zenobia* (var. *nitida*) with green leaves which are destitute of a glaucous bloom is a more common plant in North Carolina and is equally hardy here in Massachusetts. *Zenobia* is not common in cultivation in this country but is occasionally seen in English gardens.

Tripterygium Regelii. Climbing plants with handsome foliage and a conspicuous inflorescence hardy and easy to grow in New England are not very numerous, and Mr. Jack's introduction several years ago of this *Tripterygium* made an important addition to their number. It is a near relative of the Bitter Sweets (*Celastrus*) and a native of Korea and Japan where it climbs over rocks and bushes, and often climbs with stems fifty or sixty feet long into the tops of trees. The leaves are long-pointed, dark green, and often six inches in length. The small white flowers are produced in narrow open clusters ten or twelve inches long, and they are followed by showy, three-lobed and three-winged fruits from half an inch to an inch in length. By pinching the young shoots the vines can be grown as a shrub, and in this way it produces larger flower-clusters and is more ornamental. There is such a specimen just coming into bloom in the Shrub Collection, where it is also growing naturally on the trellis next to the different species of *Celastris*.

Periploca sepium. This is another handsome plant which the Arboretum owes to the labors of Mr. Jack in Korea. It is growing on the trellis near the *Tripterygium*. It is a plant with slender stems, pointed, dark green and very lustrous leaves about three and a half inches in

length and not much more than half an inch in width, and small flowers in few-flowered clusters. The flowers do not make much show when seen from a distance, but on close examination show that they are green on the outside, dark purple, with a five-lobed crown at the base on the inside, and that they are pleasantly fragrant. The plants in the Arboretum occasionally produce their slender pod-like fruits, but the plant can be easily propagated by root suckers and it might become common if better known.

Genista tinctoria. Of the small, yellow-flowered shrubs of the Pea Family, which are such a feature of the flora of southern and southeastern Europe and are so highly valued in the gardens of western Europe, the best known in Massachusetts is the Woad Wax *Genista tinctoria*. Brought early from England as a garden plant it long ago escaped from a Salem garden and has spread over and ruined hundreds of acres in Essex County. Planted in the Arboretum it has spread among the native plants like dwarf Roses and Goldenrods which form a considerable part of the ground cover among the Hickories and Oaks, and now enlivens the valley through which the Valley Road extends from Centre to South Street. There is a taller variety with larger flowers (var. *elatior*). Much more beautiful and the handsomest of these plants which have been tried here is *Cytisus nigricans*, a native of northern Italy, Austria and Hungary, and now in bloom in the Shrub Collection. No small plant now in the Arboretum is more distinct and beautiful. As it grows here it is a compact, round-topped bush from two to three feet tall and broad, differing from most of the related plants in the arrangement of the flowers which are borne in long erect racemes terminal on branches of the year; they are bright yellow and produced in great profusion.

Rosa Helenae, by some persons considered the handsomest of the Roses discovered in China by Wilson, has never flowered as well here as it is flowering now. It is a large shrub with slender arching stems furnished sparingly with small red spines and many-flowered clusters of pure white delicately fragrant flowers an inch and a quarter in diameter. It can be seen to advantage now in the Shrub Collection and well deserves a place in every collection of single-flowered Roses however small. Growing near it is a white-flowered form of a native Rose, *Rosa suffulata alba*, which came to the Arboretum several years ago from Minneapolis near which place it was discovered. The pink-flowered type is a common western plant widely distributed over the prairies from Minnesota to Montana and southward to Missouri and Texas. It is a comparatively recent discovery and was first called *Rosa pratincola*. Little cultivated it is well worth the attention of Rose lovers.

Magnolia virginiana, or as it is more often called *M. glauca*, opened its fragrant cup-shaped flowers a few weeks ago and will continue to open them until midsummer. The dark green leaves, silvery white below, are more beautiful than those of any other plant which is hardy in this climate, and remain on the branches without change of color until the beginning of winter. The flowers of no other native tree

or shrub have a more penetrating or delightful odor. A plant for every garden great or small, how often is the Sweet Bay found in those of modern construction? The town of Magnolia in Essex County, Massachusetts, which is the northern station for this plant was named for it. At the north and in the middle states it is a shrub or small tree rarely more than twenty or thirty feet high, but southward it is replaced by the variety *australis*, differing in the silky white pubescence on the pedicels and branchlets, and becoming a tree sometimes ninety feet high with a trunk occasionally three feet in diameter and the common form from North Carolina to southern Florida and westward to the valley of the Nueces River, Texas. *Magnolia major* or *Thompsoniana*, a probable hybrid between *M. virginiana* and *M. tripetala*, which was raised in an English nursery a century ago and is still a favorite plant, is in the Arboretum and is intermediate in character between these two American species; it has the general appearance of *M. virginiana* but has larger leaves and larger and equally fragrant flowers.

Magnolia macrophylla flowers a few days later than *M. virginiana* and is now in bloom. It is a wonderful southern tree with leaves silvery white on the lower surface and often thirty inches long and ten inches wide, with flowers a foot in diameter; it is perfectly hardy in eastern Massachusetts, although here as elsewhere the great leaves are often torn by the wind unless a sheltered position is selected for it. It is an interesting fact that its leaves and flowers are larger than those of any other tree which grows in an extra tropical region.

The latest Azaleas are now in bloom. There are two North American white-flowered species, *Rhododendron* (*Azalea*) *arborescens* and *R. (Azalea) viscosum*. *R. arborescens* is a handsome plant and the beauty of its pure white fragrant flowers is increased by the bright red color of the long filaments and style. It is an Appalachian plant, and sometimes at an elevation of five thousand feet covers with dense thickets only a few feet high and sometimes acres in extent the treeless summits of the Blue Ridge Mountains, and in their sheltered valleys sometimes grows into arborescent bushes twenty feet tall. A variety is known in which the white flowers are faintly tinged with rose color.

Rhododendron (*Azalea*) *viscosum* blooms a little later and is now also in flower in the Arboretum. It is a common plant in the swamps of southern New England where it is known as the Swamp Honeysuckle. The pure white clammy flowers which continue to open during several weeks are hidden by the new shoots of the year which are often fully grown before the first flowers open, and the great value of this Azalea is found in the fragrance of the flowers which makes the neighborhood of an Azalea swamp delightful. Although it grows naturally in swamps, this Azalea grows equally well transferred to a garden border or to a hillside, as on the southern slope of Bussey Hill where many of these plants are now covered with flowers.

ARNOLD ARBORETUM

HARVARD UNIVERSITY

BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JULY 17, 1924

Native and Foreign Trees. The number of foreign trees here which are superior to those which grow naturally in New England is not a large one. The handsomest Poplar probably which is perfectly hardy here and grows successfully is *Populus Maximowiczii*, a native of eastern Siberia, eastern Saghalin and northern Japan. It is the largest tree of eastern Siberia where it sometimes grows eighty feet high with a trunk six feet in diameter, and has a broad head of massive spreading branches. On young trees the bark of the trunk is smooth and pale brown but on old trees it becomes thick and furrowed. It has been growing in the Arboretum since 1878. The oldest trees in the Arboretum are on the southern slope of Peter's Hill and are now twenty-six years old and from forty to forty-five feet in height. They have never been attacked by borers which make the cultivation of the Balsam Poplars and some of the Cottonwoods so difficult and unsatisfactory, and their leaves apparently have no attraction for leaf-eating caterpillars; they are green and lustrous on the upper surface, silvery white below, three or four inches long and two and a half inches wide. *Populus Maximowiczii* is the handsomest and most satisfactory tree in the Poplar Collection and is one of the few large exotic trees with deciduous leaves which can be recommended for general planting in the northern states. The list of such trees is a short one. The two Silver Poplars of Europe, *P. alba* and *P. canescens*, flourish in the United States where they have grown to a large size and are as much at home as they are in their native countries. The pale color of the foliage of these trees is unlike that of any of the American species, and their hardiness and vitality make them useful for planting in an

exposed position. The Silver Poplar of northern China (*P. tomentosa*) is one of the handsomest of all Poplar-trees. It has grown fairly well in the Arboretum but it is too soon to form an opinion of its value in this country.

Two European tree Willows, *Salix alba* and *S. fragilis*, and some of their hybrids have become naturalized in the northeastern states where they grow as large or even larger than in Europe and are important additions to the North American silva. The so-called Wisconsin Willow, a natural hybrid between *S. babylonica* and *S. alba*, and other hybrids of the same parentage, are useful ornamental trees in the northern states.

Cercidiphyllum is the largest deciduous-leaved tree of Japan, and although it was introduced into the United States only forty years ago it promises to become a permanent addition to the trees of large size which can be successfully grown here. The Chinese White Mulberry (*Morus alba*) is a larger and hardier tree in New England than the Mulberry-tree of the eastern states, and is perfectly at home here. Probably the most generally useful, however, of the large deciduous-leaved trees which have been brought into the northern states is the Ailanthus of northern China. It is perfectly hardy and grows rapidly and it can resist the heat, drought and dryness which trees have suffered in our cities better than any other tree with the exception perhaps of some of the Poplars. The Ailanthus, too, produces wood which is valuable in cabinet-making.

Of all the Elm-trees of the world not one equals in grace and beauty the White Elm of eastern North America, *Ulmus americana*. It is a true lover of the country, however, and only shows its greatest beauty in the deep moist soil of a New England intervalle; moved to the city it soon languishes, for it resents city conditions of overdrained soil, smoke and bad weather. One of the so-called English Elms, known usually as *U. campestris*, is better able to thrive in cities where the American Elm fails, and in Boston and its suburbs this tree has been growing for more than a century and has proved itself valuable. It is now known that this name must be abandoned as there are four British Elms and a species of northern and eastern Europe which were included in Linnaeus' description of the European Elm. The tree which has usually been called the English Elm in Boston under the name of *Ulmus campestris* has been growing certainly for more than a century in Massachusetts where it has attained a large size. More than a century ago Major Paddock had a nursery at Milton for the propagation and sale of this tree. Probably no tree, native or foreign, which has been planted in the neighborhood of Boston has grown to such a size. The Paddock Elms which stood on Tremont Street in front of the Granary Burying Ground were of this species, as were the great Elms on the Tremont Street Mall of the Common which were killed by the Subway. The Elm-trees on each side of the Shaw Monument opposite the State House are of this species, and there are still large specimens in the suburbs of the city.

None of the exotic Ash-trees are really valuable in New England. For general planting in the eastern United States no Ash is as good as

the American White Ash (*Fraxinus americana*) for the decoration of parks and roadsides and the production of timber. The European Ash (*F. excelsior*), which is a magnificent tree in some parts of Europe, is a miserable failure here, and the great Ash-tree of northeastern continental Asia and northern Japan (*F. mandshurica*) can barely be kept alive in New England.

European Birch-trees grow well in the northern states until they are attacked by a borer which destroys them by thousands. The slender drooping branches of *Betula pendula* make it an interesting and attractive object, but it is not as handsome a tree as the Canoe Birch (*Betula papyrifera*) which is the handsomest of the white-barked Birches, and in one of its forms exceeds all other Birch-trees in size. *Betula Maximowiczii*, with pinkish bark and a native of northern Japan, is a handsome tree than the Canoe Birch. It has been growing in this country for a quarter of a century, and although it is perfectly hardy it is too soon to speak of its permanent value.

The pale gray bark of the trunk and branches of the American Beech make it in winter the most beautiful of all Beech-trees, but as a planted tree it does not behave as well or grow as rapidly as the European Beech which, in spite of its darker-colored bark is a better tree for the decoration of our parks.

The northern Linden (*Tilia glabra* or *americana*) is a noble tree in northern forests where in deep moist soil it sometimes grows to the height of one hundred and thirty feet and forms a trunk four or five feet in diameter. It does not, however, take kindly to cultivation in a climate as warm as that of Massachusetts. Planted trees grow slowly here. The leaves are usually disfigured by red spiders and turn brown and fall during the summer. Little is known yet in cultivation of the Linden trees of the middle and southern states and a planter who wants Linden trees had best use some of the European species. There are five of these, and the three species of western Europe have been so thoroughly tested in the United States that it is possible to say they are among the most valuable trees which have been brought here from foreign countries. The most satisfactory of them here is *Tilia vulgaris*, a widely distributed but rather rare tree in Europe; it is believed to be a natural hybrid between the other species of western Europe, *T. platyhyllus* and *T. cordata*. There are large specimens of *T. vulgaris* in the suburbs of Boston.

No American Horsechestnut or Buckeye can compare in size or in the beauty of its flowers with the species of southwestern Europe (*Aesculus Hippocastanum*), which is well known to many Americans who have never heard there were Horsechestnut-trees growing naturally in the United States. The European Horsechestnut is another of the great trees of the world. It is as much at home here and grows to as large a size as it does in western Europe. Few trees have more conspicuous flowers or foliage of deeper green. It thrives, however, only in deep rich soil and usually resents city conditions. In some old gardens in Salem there are, however, as noble Horsechestnuts as can be found in the United States or Great Britain. It is a miserable

street tree, as can be seen in Paris, where the leaves turn brown and fall by mid-summer, and in New York and Boston where fortunately it has not been generally planted.

Among the foreign Maples of large size which have been planted in the eastern states only the so-called Norway Maple (*Acer platanoides*) has shown real power to flourish here. It is a smaller and less beautiful tree than the Sugar Maple, but the Sugar Maple, too, resents city conditions and objects to living at the seashore; and as the Norway Maple has proved a valuable tree for city and seashore planting it must be considered one of the really valuable foreign trees introduced into this country.

The Old World Walnut-tree (*Juglans regia*), sometimes called English or Persian Walnut, although it is a native of China, is a handsomer and more valuable tree than any of the American Walnut-trees, but unfortunately it is doubtfully hardy in the northeastern states and it will probably never grow to such a large size here or produce the great crops of nuts and the timber which make this such a useful tree in many parts of the world.

Another of the great trees of the world, the *Gingko*, flourishes in New England as well as it does in eastern Asia or Europe. It is the only survivor of a race which was once widely spread over the northern hemisphere. It is long-lived and able to support extremes of heat and cold, and grows equally well in Massachusetts, Georgia and California. The *Gingko* has been largely planted in the city of Washington, but in other parts of the United States the beauty of the tree when it gets beyond the juvenile state is not sufficiently understood.

Pseudolarix is another Chinese tree which is alone in its class, and although discovered only seventy years ago it has been long enough in this country to show that it is perfectly able to adapt itself to the Massachusetts climate. This is surprising for the home of *Pseudolarix* is on low mountain slopes not far from the coast and south of the Yangtse River. The European Larch, although less picturesque than the Larch of northeastern North America, is a larger and more valuable tree, and experience with it in New England shows that it is a tree which can be depended on and grows here to a large size.

It appears, therefore, from the experience gained in Massachusetts during a long period that only the following deciduous-leaved trees of large size have proved themselves valuable for general planting, for ornament and timber, in the northeastern states: the *Gingko*, the *Pseudolarix*, the European Larch, three species of Poplar, two of Willows and their hybrids, the *Cercidiphyllum*, the White Mulberry, the *Ailanthus*, the European Beech, one European Elm, one Birch, three Lindens, the European Horsechestnut, and the Norway Maple, nineteen in all.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JULY 24, 1924

The Library, which was begun in 1873, now contains 35,471 complete volumes, and 8000 pamphlets. In the large eastern hall of the second floor are arranged the books of reference and the Floras of all countries which contain accounts of woody as well as of herbaceous plants, the general library Catalogue, and the collection of photographs. In the small room over the front door books of travel containing information about trees are arranged, among which perhaps the rarest is the Dutch copy of Michaux's Travels. In the large room which occupies the western end of this floor of the building, divided by shelves into six compartments used by students, the current periodicals numbering between 300 and 400, and representing nearly every country are grouped, together with the no longer issued periodicals, by countries, arranged alphabetically as far as the shelving will permit. Among these periodicals are complete sets of the *Gardeners' chronicle*, the *Botanical magazine*, the *Botanical register*, Loudon's *Gardener's magazine*, Loddiges' *Botanical cabinet* and his trade catalogues, a set of the *Revue horticole*, lacking three early volumes, the oldest garden magazine still published, a set of the rare *L'Horticulteur belge* in five volumes from 1833-1838, and a nearly complete set of the *Tokyo Botanical magazine*. Here also is Dietrich's *Oekonomisch-botanisches garten-journal* in six volumes 1795-1806, almost unknown in America, a complete set of the *Verhandlungen des Vereins zur beförderung des gartenbaues* in Berlin, the *Annales de l'Institut horticole de Fromont*, 1829-34, and Landreth's *Floral magazine and botanical repository*, 1832-34, a rare American journal.

The upper floor of the new wing contains the books of the fifteenth, sixteenth and seventeenth centuries, books on dendrology, monographs of genera, forestry, landscape gardening, medical and economic botany, pathology, natural history, biography and autobiography.

Since 1904 Miss Ethelyn Maria Tucker has catalogued and arranged the books and prepared the manuscript of the printed Catalogue of the library published in two volumes, 1914-1917. Since the publication of the second volume 6000 titles have been added to the collection.

In the main hall, besides the standard works of reference, the Floras, large folios on sliding shelves, and the collection of photographs, can be found a nearly complete set of the botanical works of Linnaeus in all editions, including the rare "Viridarium Cliffortianum," believed to be the only copy in the United States since the one in San Francisco was destroyed in the earthquake in 1906. For twenty-five years the Arboretum sought to obtain this small book. The Arboretum is one of nine libraries in the United States known to contain original Linnean dissertations. The publications of Asa Gray and of three generations of De Candolles are in this room, in which will be found all the folios of Redouté, one of the greatest of all botanical artists who lived about one hundred years ago in Paris, including *Les roses* and *Les liliacées*, and all the works relating to woody plants illustrated by him.

In the main hall attention is also called to the folios of Jacquin, an Austrian botanist, the most valuable of which is the *Selectarum stirpium americanum historia*, cir. 1780, of which there were only eighteen copies issued, and at the time the Arboretum copy was obtained it was the only one in this country; there are now two other copies, one in the library of the New York Botanical Garden and one in the Congressional Library in Washington. The two folios of Dioscorides' *Codex* in heavy board covers which lie on nearby shelves reproduce in facsimile the pages and plates of the famous Codex prepared in 512 A.D. for Anicia Juliana, daughter of the Emperor of the Eastern Empire, which is now preserved in the Hofbibliothek at Vienna. The original is the oldest known manuscript of a botanical work, written in Greek on *Materia medica* in the first century after Christ and describes or names more than five hundred plants. For sixteen centuries this book was considered the highest authority, and became the basis of modern treatises on botany, and from it this science derives nearly all its nomenclature. Attention is called to the Bradley Bibliography in five volumes, comprising 3895 pages, prepared by Mr. Alfred Rehder and to the other books written by members of the staff. In the main hall are also a large octavo edition of Audubon's *Birds of America* in seven volumes, 1840-44; Captain Thomas Brown's *Illustrations of the American ornithology of Alexander Wilson and C. L. Bonaparte*, folio edition, published in London in 1835, of which only thirteen copies are known to exist, eight being in the United States; complete collections of the works of Rafinesque, and of Engelmann; Engler and Prantl's *Die natürlichen pflanzenfamilien* to date; Engler's *Pflanzenreich* to date; Bonpland and Humboldt's *Voyage*, 6^e partie, *Botanique* in seven folio volumes, 1815-25; *Annals of the Calcutta botanic garden*, vol. i-xii, 1887-1914, folio; Martius' *Historia naturalis palmarum* in three folio volumes, 1823-50; Reichenbach's *Icones florae germanicae et helveticae*; three edi-

tions of Sowerby's *English botany*; Curtis's *Flora londinensis*, folio, in two volumes, 1777-1798, and the new edition in five volumes, 1817-1828; Oeder's *Flora danica* in seventeen folio volumes, 1761-1783, with supplement, 1887.

The photographs, occupying eleven steel cases, have been mounted, catalogued, and arranged alphabetically in groups under Miss Tucker's direction and the collection now contains 11,073 pictures. A large number of these photographs were taken by Mr. Wilson during his many journeys for the Arboretum in eastern Asia, Australasia, India, and Africa, and many were obtained in the botanic gardens visited by him during his recent journey; to the Rochester Park Department the Arboretum is also indebted for a large number of useful and interesting photographs. While the number of photographs taken in the Arboretum is already a large one, Mr. Wilson is now filling in gaps, so that in time every plant cultivated here will be represented. Photographs of famous trees in New England are also being made by him for the collection as fast as possible.

The collection of Pre-Linnean books (before 1737) on the upper floor is a good one and contains the greatest bibliographical treasures in the Arboretum, including twenty-five books published in the fifteenth century, namely, Apuleius Platonicus, *Herbarium* 1481?; Barbaro, *Castigationes*, 1492-93; Bartholomaeus Anglicus, *De proprietatibus rerum*, 1480-1491; *Libri de re rustica*, n.d.; Crescentius, *Opus ruralium commodorum*, cir. 1471; *Herbolarium seu de virtutibus herbarum*, 1491; *Ortus sanitatis* 1490 or 1497, 1496 or 1487, and 1491; *Gart der gesuntheit*, 1485; Macer Floridus, *De viribus herbarum*, date unknown; *Opera agricolationum*, 1482 and 1496; Matthaeus Sylvaticus, *Liber pandectarum medicine*, cir. 1470 and 1480; Conrad von Megenberg, *Buch der natur*, 1478; Plinius Secundus, *Historia naturalis*, 1483 and 1496; Theophrastus Eresios, *De historia plantarum* 148 ?; Vincentius Bellocensis, *Speculum naturale*, 2 vol. 1479 ?, and 3 vol. 1486 ?; Columella, *Cultu hortorum*, Hain 5498; Columella, *Ortuli commentarium*, Hain 5495, and Lucretius, *De rerum natura*, 1486.*

Many editions of these fifteenth century books were published in the sixteenth, seventeenth and eighteenth centuries, and of these the library contains eight editions of Macer Floridus, 1506-1588, with one of 1832; three of the *Ortus sanitatis*, 1511-1536; three of Columella's Husbandry, 1551-1745, with one of 1824; seven of Pliny's *Historia naturalis*, 1507-1685, with one of 1855-57; sixteen of Theophrastus, 1529-1644, and later, and nine of Crescentius' *Opus*, 1534-1745, with one 18-? Of Prospero Alpino there are ten titles and editions, 1592-1745; five editions of Francis Bacon's *Sylva sylvarum*, 1627-1670; seven of Bauhin's *Pinax theatri botanici*, Greek and Latin, 1596-1671; nine of Bonnefon's *Jardinier françois*, 1653-1684; seven of Van Oosten's *Nederlandse bloemhof*, 1700-1749; twenty-one titles and editions of Richard Bradley on husbandry and gardening, 1716-1757; Brunfel's *Herbarum* of 1530 and 1532, and editions of a second volume; numerous titles and editions by Charles Estienne, 1537-1622; fourteen works and editions by Olfert Dapper, 1668-1703; full collections of the works of Dioscorides, Mat-

*A fuller description of the incunabula in the library is given in the *Arboretum Journal*, vol. iv., No. 1.

tioli, Ray, Evelyn's *Sylva*, Miller's *Gardener's dictionary* and other gardening books; twenty-one editions of Dodoen's *Crujdeboeck* and other works, 1521-1644; twenty-five works and editions by Leonhard Fuchs, 1531-1572; nine of Herrera's *Obra de agricultura*, 1513-1608, and 1819; eleven of Huerto, 1567-1616; sixteen of La Quintinye's *Instruction pour les jardins fruitiers*, 1690-1756; eleven of Liger's *Jardinier fleuriste*, 1706-1792; six of Tabernaemontanus' *Eicones plantarum*, 1588-1731; Ptolemy's *Geographia*, 1562; four editions of Manwood's *Treatise and discourse of the lawes of the forest*, 1598, 1616, 1665, 1717, and Aristoteles' *Problemata quae ad stirpium genus & oleracea pertinent*, 1539. Other books in this group of more than usual interest are Boym's *Flora sinensis*, 1556, the first book on Chinese botany published in Europe; Blake's *Compleat gardener's practice*, 1664; Gerard's *Herbal*, 1597, containing a manuscript note dating from the time of Shakespeare; *Le grant herbier*, cir. 1520; *The greate herbball*, 1561, and many others. Many of these books are curiously or beautifully bound, and very rare.

On this floor besides the Pre-Linnaean books are other books of special interest, Wangerheim's *Beschreibung einiger nordamerikanischen holz- und buscharten*, 1781, the first book on American trees by a German; Belon's *De arboribus coniferis*, 1553, the first book on Conifers; a copy of Humphrey Marshall's *Arbustrum americanum*, 1785, the first book on American trees written by an American; Faxon's original drawings for Sargent's *Silva*; and works on tea, coffee, cocoa, silk, cinchona, rubber and roses, many of them extremely rare. The rose collection is a large one and includes, besides the editions of Redouté, Rössig's *Die rosen*, bought at the Castlecraig sale in England.

The collection of publications on conifers contains all the books which are known to have been published about these plants; and it may be added here that the collection of conifers in the herbarium, many of the species being represented in long series valuable for study, is probably the best in the world, only five or six species which grow on the mountains of New Guinea and on the Fiji Islands being now unrepresented in it.

The library contains many books which are not necessary for practical work with the living plants of the Arboretum, but it has been made with the idea that while only a few plants can be cultivated here and that it would be a slow and practically impossible undertaking to make a complete herbarium of the trees of the world, books about them are interesting and that the library could be made one of the important departments of the Arboretum. It is believed to be the largest and best arranged dendrological library in the world, and there are few libraries anywhere devoted exclusively to a comparatively small subject which are as large and as nearly complete.

With the exception of twenty-five volumes written by members of the staff and published by the Arboretum this library, now valued at about \$1,000,000, has been presented by a few friends to the University.

With this issue the publication of the Bulletin will cease until the autumn.

ARNOLD ARBORETUM

HARVARD UNIVERSITY



BULLETIN

OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

OCTOBER 24, 1924

Autumn Colors. This is one of the most interesting times of the year to visit the Arboretum which is gay now with the autumn colors of many leaves. Those of a few plants have already turned and begun to fall, and others are practically as green as they were in summer. The most brilliant color made in the early autumn is by the native Red Maple, the *Ampelopsis* or Virginia Creeper, and *Phellodendron amurense*. This last is a small tree from the Amoor region of eastern Siberia and is chiefly interesting as the type of a small genus with a few species of trees of eastern Asia of the Rue Family, and for its peculiar thick, ridged, pale, cork-like bark. Early in October the leaves turn to a bright clear yellow which is hardly equalled in beauty by the yellow autumn leaves of any other tree. This beauty is short-lived and the branches are already bare. This is perhaps one of the rarest trees in the Arboretum and certainly the rarest of the five species which are now well established here. *Phellodendron japonicum* appears to have been raised first in the United States in the Botanic Garden at Cambridge, and the male and female plants were moved from there to the Bussey Institution in its very early days and are still flourishing and producing their fruit annually. Two plants of *Phellodendron amurense* came a little later direct to the Arboretum from the Imperial Botanic Garden at St. Petersburg in small pots and unfortunately are both of one sex and have never produced flowers.

The *Sassafras* is just now, too, one of the most beautiful trees in New England woods and by roadsides as the leaves have turned or are turning orange or yellow more or less tinged with red. The

autumn colors of several trees are perhaps more brilliant but none of them equal the Sassafras in the warmth and delicacy of their autumn foliage. The Sassafras is also a handsome tree at other seasons of the year. In the winter it is conspicuous for its dark cinnamon gray bark and slender light green branchlets; in early spring before the leaves appear it is covered with innumerable clusters of small light yellow flowers which make it at that time a conspicuous and beautiful object. The leaves are thick and green, lustrous above, paler below, and very remarkable in shape as they are sometimes deeply lobed at the apex and sometimes entire without a trace of lobes. The fruit is bright blue surrounded at the base by the much enlarged and thickened small calyx of the flower, and is raised on a bright long red stalk. No other North American tree produces such brilliantly colored fruits. Unfortunately there is little time to enjoy it for the birds greedily seek it as soon as it ripens. The wood of the Sassafras is not attacked by borers, and the leaves are not destroyed or rarely disfigured by insects. The thick spongy roots of this tree produce suckers freely and these with a little care should be safely transplanted. How many persons now plant the Sassafras, and in how many American nurseries can it be found? It was, however, one of the first North American trees carried to Europe, as it was established in England sometime before the middle of the seventeenth century. Until 1879, when another species was discovered in central China, the American tree was believed to be the only Sassafras. The Chinese tree has unfortunately not yet proved hardy in New England. The American species does not always prove as easy to transplant as it might, and in the Arboretum it has proved extremely difficult to multiply as much as has been desired.

The color of the leaves of a group of dwarf Hawthorns is not surpassed in beauty from the middle to the end of October. These plants are referred to the *Intricatae* Group and are arranged together on the lower side of the road at the eastern base of Peter's Hill next to the Crabapple Collection. These shrubs are confined to the northern United States and Canada, and are perhaps more numerous in Pennsylvania, western New York and Michigan than in any other part of the country. Their flowers are large and conspicuous with yellow, rose-colored or pink anthers, and the fruit ripens late and is scarlet, red, orange-yellow or russet, and its beauty is increased by the brilliantly colored leaves at the time it ripens. A large number of these plants are now in the collection, and one of the handsomest this year is *Crataegus cuprea* with scarlet foliage and russet or copper-colored fruit. This little shrub was first detected in a small lot in the city of Wilmington, Delaware, and is not known to grow naturally beyond the limits of that city. *Crataegus Delosii*, found growing several years ago by the side of a road near Toronto, is unusually full of its orange and red fruits this autumn. This species differs from the others of the group in the large number of fruits (ten to fifteen) compactly arranged in dense clusters. The autumn leaves are green and yellow. Other species of this group deserving of attention are *C. infera* from the neighborhood of Sellersville, Bucks County, Pennsylvania, with orange-red fruit and brilliant orange and red autumn leaves; *C. fruticosa*, a shrub five or six feet tall, which has only been found on the Serpentine Ridge near West Chester, Pennsylvania, with deep, orange-red

fruit in small erect clusters, and dark red-purple autumn leaves; and *C. modesta*, a shrub not often more than twelve or eighteen inches high, first noticed on a hill near Rutland, Vermont, but now known to grow in many places in southern New England and to range into eastern Pennsylvania, and conspicuous in the autumn with its bright scarlet leaves and green, yellow or orange and red fruits. Two of the southern Appalachian species, *C. Buckleyi* and *C. Boyntonii*, are small trees rather than shrubs and in the Arboretum have grown into pyramids now ten or twelve feet tall and are still covered with dark green leaves which later turn to shades of orange and scarlet.

As a general rule the bright colors appear earlier in the autumn on eastern American than on allied Asiatic species, but there are a few conspicuous exceptions to this rule; and in addition to the *Phellodendron* during the last week or ten days *Acer ginnala*, *Evonymus alatus* and *Rhododendron (Azalea) japonicum* have perhaps been the most brilliant plants in the Arboretum. The Maple is a small shrubby tree sometimes thirty or forty feet high, with pointed deeply divided leaves, and compact clusters of fragrant flowers. A native of eastern Siberia, where it is common in the neighborhood of Vladivostok, it was one of the first plants introduced into the Arboretum whence it came from St. Petersburg. No American tree assumes more brilliant tones, but the brilliancy lasts only for a few days and the leaves fall early. *Evonymus alatus* from Japan is without a rival in the brilliancy of the deep rose color passing to scarlet of its autumn leaves. The habit of this shrub is excellent when it has an opportunity to spread out in the sun but the flowers and fruit are inconspicuous. The value of the Burning Bush as a decorative plant is now appreciated and it is found in many American nurseries, but it must not be forgotten that it requires a large space in which to develop its greatest beauty. A form of this shrub raised from seeds collected in Korea by Mr. Jack with its larger fruit and even more brilliant autumn foliage is handsomer even than the Japanese form. In their autumn color of old gold the leaves of *Rhododendron japonicum* are more beautiful than those of any others in the collection, and its autumn color greatly adds to the ornamental value of this shrub which when in flower is the handsomest of the Asiatic Azaleas which are hardy in this climate, with the exception of the Korean *Rhododendron Schlippenbachii*.

Sorbus alnifolia of the section *Micromeles* of the genus is perhaps the most satisfactory of the Mountain Ashes with entire leaves which can be grown here. It is a common Japanese tree and occurs also in Korea, in northern and central China, and sometimes in its native country grows to a height of sixty feet. Several specimens have been growing in the Arboretum since 1893 and are now from twenty to thirty feet tall. These trees are pyramidal in habit with pale smooth stems, upright branches which form a broad, compact, symmetrical head, and dark green leaves three or four inches long, small white flowers in from six- to twelve-flowered clusters, and abundant lustrous scarlet or orange-colored fruit which remains on the branches after the leaves and until eaten by birds which are fond of the fruit of all the species of *Sorbus*. The leaves turn bright clear yellow about the middle of October and soon fall. Mountain Ashes thrive only in well-drained rich soil and

suffer from drought and insufficient nourishment. They are particularly liable to attacks of the San José scale, and in order to secure healthy plants it is important to spray them late in March or early in April with lime-sulphur.

Viburnum prunifolium, often called Black Haw, is perhaps one of the handsomest of the small trees or large shrubs in the Arboretum with scarlet or purple leaves which are just turning. A common plant on hillsides in the middle Atlantic states the Black Haw, although not a native of Massachusetts, is hardy here and well deserves cultivation for it is an object of interest from early spring until the beginning of winter. The leaves are thick, coriaceous, dark green and lustrous above and pale below. The flowers are white, in slightly convex clusters, and these are followed by fruit pink at first when fully grown, becoming dark blue and covered with a glaucous bloom when ripe and persistent on the branches until winter. A southern representative of this plant with which it was long confounded is now called *Viburnum rufidulum* and is a larger and handsomer tree with thicker and more lustrous leaves which turn deep purple in the autumn. This tree, which under favorable circumstances becomes the largest and is perhaps the handsomest of all American Viburnums, is easily recognized by the large russet brown felt which covers the winter-buds. *V. rufidulum* grows in the Arboretum where it flowers and ripens its fruit, but it is doubtful if it ever becomes more than a medium-sized shrub here.

The leaves in autumn of some of the American Azaleas are almost as brilliant as those of *Rhododendron japonicum*. Perhaps the most brilliant of these is the late-blooming, yellow or flame-colored *Rhododendron calendulaceum* which equals some of the other shrubs of the family which are unsurpassed in beauty during several months. None is more beautiful in the autumn than the crimson or purple of the leaves of the Highbush Blueberry so-called, *Vaccinium corymbosum*. This plant is handsome, too, in early spring when its white bell-shaped flowers open, and in August or September when the blue-black fruit covers the branches. A native of swamps, the Highbush Blueberry grows equally well in dry gravelly ground, and the best plants in the Arboretum are on Bussey Hill near the entrance to Azalea Path and opposite the overlook. The autumn color of the other northern Blueberries and Huckleberries is as brilliant as that of the Highbush Blueberry and some of them, especially *Vaccinium pennsylvanicum*, are invaluable for covering dry ground under Oaks and other hardwood trees. The white flowers are attractive; the bluish black berries, which are the earliest Blueberries to ripen, have a fair flavor and during a month or more in autumn the plants form broad masses of scarlet only a few inches high and more brilliant in color than the flowers of the Heather on the Highlands of Scotland. Every encouragement with good results has been given in the Arboretum to the spreading of these Blueberries.

ARNOLD ARBORETUM

HARVARD UNIVERSITY



BULLETIN

OF

POPULAR INFORMATION

JAMAICA PLAIN, MASS.

OCTOBER 29, 1924

The genus *Quercus*, to which Oak-trees belong, is widely distributed through the northern hemisphere and some of the species are unsurpassed in beauty and magnificence among the trees contained in this hemisphere. Comparatively little attention has been paid to them as ornamental trees in this country; one is reminded of this fact at this season of the year when the splendor of the autumn color of several of the species in this climate is shown, and regrets that so few Oaks are found in our plantations. A walk at this time in the Arboretum through Oak Path from a point on the Meadow Road nearly opposite the Centre Street Gate to its junction with Azalea Path on the southern slope of Bussey Hill will be found interesting and instructive. This walk passes by the first Oaks which were planted in the Arboretum. Beautiful views toward the west, including the Juniper Collection and Hemlock Hill, can be obtained from it, and before it joins Azalea Path it will pass by some of the handsomest Azaleas in the Arboretum.

Oaks have the reputation of growing slowly, and owing to this reputation have been neglected by planters. Fifty odd years ago when the Arboretum was started few persons in the United States planted Oak-trees, and it was practically impossible to obtain in American nurseries even the commonest native species. Some of the species raised from seeds were first planted in the Arboretum nearly fifty years ago when only a few inches tall. The largest of them now are taller with thicker trunks than other hardwood trees planted about the same time here, like Hickories, Walnuts, Maples, Elms, etc. The tallest of the Oaks planted in the Arboretum are Pin Oaks (*Quercus palus-*

tris), and the tree with the thickest trunk is a hybrid between the White and the Burr Oaks called *Quercus Bebbiana*.

This is a poor region, however, in which to judge the value of many Oaks as ornamental trees. It is too cold here and only a few species have proved hardy in New England, and of the fifty-five species which become trees in the United States it has been found possible to keep alive in the Arboretum only seventeen species. Of the shrubby species there are in the Arboretum only the Chinquapin Oak (*Quercus prinoides*) and three or four of the Rocky Mountain species which grow very slowly here and give little promise of value as ornamental plants. Some of the handsomest of the American Oaks, including all the species confined to the southern states, to the Pacific coast region, and to Arizona and New Mexico, cannot be seen growing in the Arboretum. No evergreen Oak can support this climate, and the Oaks of western Europe are usually short-lived in eastern America. The deciduous-leaved Oaks of western Europe and those of northern Japan, Korea, northern and western China, grow well in the Arboretum and a few of these already produce good crops of fruit. The largest Asiatic Oaks in the Arboretum are plants of *Quercus variabilis* and *Q. dentata* on the Oak Path near its southern end. The principal collection of Asiatic Oaks, however, is on the southern slope of Bussey Hill between Azalea Path and the Bussey mansion. In the mixed plantation of trees near the summit of Peter's Hill are many Oak-trees, including large plants of the Japanese species raised from seed brought from Japan in 1892. Scattered through the Oak plantations are several hybrids of the American species, and no opportunity is lost to increase the number of these hybrids which are now known to occur between various species growing in different parts of the country. The oldest of these hybrids now known in the neighborhood of Boston is on the Sargent estate in Brookline; it is of uncertain origin, but no doubt was planted by Mr. Thomas Lee as early as 1820. This tree is now known as *Q. Sargentii* and reproduces itself quite accurately, and as a young plant grows very rapidly. There are already good-sized trees in some of the Arboretum borders. All of these hybrid Oaks are interesting, and some of them are handsome trees, like *Q. Comptonae* in Natchez, Mississippi, for example, a hybrid of *Q. lyrata* and the southern Live Oak, *Q. virginiana*, one of the most splendid Oak trees in the world but unfortunately of too tender blood to bear the severity of a New England winter.

The early spring is one of the seasons when our northern Oaks can be studied to good advantage, for the color of the very young leaves and the amount and character of their hairy covering is different on every species. These characters are constant from year to year, and it is easier to distinguish, for example, a Black Oak (*Quercus velutina*) from a Scarlet Oak (*Q. coccinea*) by the unfolding leaves than it is by the mature leaves which on some individuals of these species are difficult to distinguish. In the autumn the leaves of Oak trees turn later than most of our deciduous trees; the color, however, is assumed irregularly on different individuals of the same species, and on some of them they are green while on others they are scarlet or yellow. Oak trees form the brilliant feature certainly of the North American forest in late autumn, and if for no other reason should be planted for the autumn color of their foliage; it is surprising that they are not more

generally planted, especially as the autumn colors of many of them, like some individuals of the White Oak and the Scarlet Oak, are not surpassed by those of any trees in the northern forests. It is true that nearly all Oak trees, with the exception perhaps of the common Red Oak, are difficult to transplant unless this is done when the plants are very young seedlings, but when finally transplanted when only one or two years old they grow, as has been seen in the Arboretum, as rapidly or more rapidly than any other deciduous trees hardy here, with the exception perhaps of Willows and Poplars. For the decoration of parks, parkways and roadsides they are superior to other trees, especially Elms and Ashes, for they grow as rapidly or more rapidly when once established and are rarely ruined by wind which every year in northern city parks destroys hundreds or even thousands of Elms, which are perhaps the most popular trees to use in this country for this purpose because they can be transplanted when of large size. Lightning, of course, injures an Oak as often and as seriously as it does any other tree, but apart from lightning Oak trees are rarely injured by accidents, and the insects which attack them are no less easy to handle than the insects which have been so destructive to Elms.

The new parkways in the neighborhood of Boston have in the last twenty years been generally planted with Red Oaks and fifty years hence these should make magnificent spectacles, and long survive the American and European Elms which have been so often used for this purpose. There is not a single Oak-tree certainly of any age on Boston Common; and the comparatively few Oak-trees growing at Mt. Vernon either before Washington's time or which have sprung up since bear no evidence that he ever planted an Oak of any species, although Mt. Vernon is well suited to produce Oaks of ornamental value. In the extreme southern states, especially in Natchez, Mississippi, and Louisiana, planters a hundred years ago fortunately planted Live Oaks and these are probably now the finest Oak-trees which have been planted in the United States. It is interesting that one of the handsomest Oak-trees in the United States is the hybrid *Quercus Comptonae* which appeared many years ago on Dr. Duncan's plantation near Natchez. This tree, which was destroyed a year or two ago by a storm, has produced a few seedlings which are growing near Natchez, and occasionally in Louisiana, and which are now great trees unsurpassed in beauty.

Some one should take up the hybridization of Oaks seriously, especially the Chinese and Japanese species, for judging by our small experience with hybrid Oaks efforts to increase the forms in this manner promises to add valuable material to our plantations in the northern hemisphere. Occasionally hybrids will be found growing naturally, but it is not probable that unknown hardy species are likely to be discovered except possibly in the great unexplored region in northern Tibet and on the high mountains of northern Kansu in northwestern China.

Enkianthus. The Japanese species of this Asiatic genus of the Heath Family all grow well in the Arboretum and the group of these plants on the lower side of Azalea Path furnish pleasure to many persons in spring when they are covered with bell-shaped flowers, and in late October when the leaves are bright scarlet. The handsomest of these

plants in the autumn, *Enkianthus perulatus*, is a compact round-headed shrub with white flowers. This is a popular plant in Japan and can be seen in many Japanese gardens cut into a round ball. It has never produced seeds in the Arboretum, and has remained exceedingly rare in this country. More common is *E. campanulatus*, which is sometimes in Japan a tree twenty-five or thirty feet tall and which in the Arboretum has grown from seed in thirty years into a narrow shrub eight or ten feet tall. The yellow flowers tinged with red, or in one variety pure white, hanging gracefully in long racemes, are attractive. This plant produces quantities of seeds every year, and there is no reason why it should not become a common garden plant in those parts of America where the soil is free of lime.

Ligustrum vulgare. Attention has been often called in these Bulletins to the value of the common European Privet, *Ligustrum vulgare*. In recent years much attention has been paid by botanists and gardeners to the Privets of eastern Asia, where many species have been discovered. None of these, however, are as valuable in this climate as the European species which is perhaps the handsomest of all the hardy black-fruited shrubs. The bright shining fruit is borne in compact clusters which stand up well on the ends of the branches above the dark green lustrous leaves and remain on the plants during the early winter months and after the dark green leaves have fallen. Formerly this was a common garden plant in the northern states and is now sparingly naturalized in some parts of the country. There is a form with yellow fruit which is much less beautiful than the type, and there is a variety *foliolosa* in the Arboretum collection which has rather narrower leaves and larger fruit. This shrub, although apparently little known in our gardens, is one of the handsomest of all the shrubs here at this season of the year.

Crataegus phaenopyrum, formerly called *C. cordata*, the Washington Thorn, is not as well known as it was perhaps one hundred years ago when less attention was given to American Hawthorns, and it appears to have been frequently used then in the middle states as a hedge plant. Near the group of *Crataegus punctata* on the Bussey Hill Overlook are two large plants. It is a narrow tree sometimes thirty feet tall, with erect branches and small, nearly triangular lustrous leaves which are now beginning to turn bright scarlet. The small globose fruits are also turning scarlet and will remain on the branches until spring with little loss of beauty. This is the latest of all the species of Hawthorn in the Arboretum to flower. The only drawback to this handsome little tree is found in the brittleness of the branches which are often broken by high winds.

ARNOLD ARBORETUM
HARVARD UNIVERSITY



BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

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The Arboretum has not as yet greatly suffered from the severe drought which has prevailed in New England, only thirty minutes of rain having fallen here since the 1st of October. The autumn color of the leaves of many plants has never been finer than it has this year, but the leaves have already fallen from most of the trees, even from the Oaks which are the last to make a great show. The leaves of the Blueberries and Huckleberries which turn scarlet late in the autumn still make a display, and as a ground cover in native woods there are no more beautiful plants than the three dwarf Blueberries of the eastern states, *Vaccinium pennsylvanicum*, *V. canadense* and *V. vacillans*.

Many other shrubs which make a showing with their crimson leaves in the late autumn, especially when covered with the scarlet fruit, are conspicuous. Of the species closely related to the common Barberry, *Berberis vulgaris*, the handsomest perhaps in the collection is the Japanese *B. Regeliana*, a large shrub with large pale flowers, large fruit and leaves which turn orange and scarlet. Although still rare here, this plant was brought to the United States more than fifty years ago and was long cultivated in the Parsons Nursery on Long Island as *Berberis Hakodate*. The Chinese *B. diaphana* is now perhaps the handsomest of the species known here with dark autumn foliage. This is a low round-topped shrub, broader than high, with large solitary flowers, which rarely produces fruit. The only objection to this shrub is that the leaves unfold so late that the plants appear dead when other Barberries are covered with fully grown leaves. Among the Chinese species a most beautiful Barberry is *Berberis circumserrata*, a small

round-topped shrub with large solitary flowers and leaves which in early November turn to as brilliant shades of scarlet as those of any other plant in the Arboretum. Other species which are particularly attractive in the autumn are *Berberis koreana*, *B. lucida*, *B. amurensis*, *B. dictyophylla* and *B. Vernae*.

A few shrubs still retain the summer color of their foliage. In addition to *Ligustum vulgare* mentioned in a recent Bulletin are the two Japanese vines of *Akebia*, *quinata* and *A. lobata*. *A. quinata*, with leaves composed of five leaflets, and with small dark purple flowers, is well known in American gardens, *A. lobata* is less well known in this country; it differs from *A. quinata* in the three, not five, rather larger leaflets which turn late in the autumn just before falling to a handsome dark bronze color. In this country the Akebias rarely produce fruit, which resembles in shape a short thick banana and is pale violet in color and contains many small seeds embedded in sweet juicy pulp. Of that of *A. lobata* the Japanese are fond as the fruit is found in great quantities in the markets of northern Japan. This species has never produced fruit here in the Arboretum, and occasionally has been killed nearly to the ground in severe winters.

***Lonicera Maackii* var. *podocarpa*.** Of the plants conspicuous in late October and early November for the beauty of their bright green leaves and scarlet fruit none perhaps is more beautiful than this Honeysuckle which was introduced by Wilson from central China. It is a large, vigorous and hardy shrub with wide-spreading branches and open habit. The flowers are larger than those of most Honeysuckles, are white, and in one form are slightly tinged with rose color. It is still covered with bright green leaves, and the large scarlet lustrous fruits are only just ripe. The best specimen of this Honeysuckle in the Arboretum can be seen in the collection of Chinese shrubs on the southern slope of Bussey Hill. The type of this species, *Lonicera Maackii*, is a native of eastern Siberia and is an old inhabitant of the Arboretum where it is growing in the Shrub Collection. It is a narrow shrub with stems more erect than those of the form from central China. The flowers are pure white and more beautiful than those of the Chinese plant, but the fruit just now ripe is smaller and the leaves have already fallen.

***Ribes fasciculatum* var. *chinense*.** The Chinese Currant is interesting because it is the only species here with fruit which does not ripen until late in the autumn. The beauty of the scarlet fruit is increased, too, at this time by the color of the leaves which have now turned to shades of orange and scarlet. There is a plant of this Currant in the Shrub Collection and also in the supplementary Ribes Collection opposite the Administration Building.

***Evonymus semipersistens*.** This is a rare Chinese shrub which is little known in this country and of which there is a large specimen still standing in the old Evonymus Group on the right hand side of the Meadow Road. The fruit of this species has no ornamental value for it is small and hidden by the foliage, and its value is found in the persistence of the leaves which remain perfectly green and do not fall

until December. This is one of the handsomest of the shrubs in the Arboretum which retain their foliage without change of color until the beginning of winter. Such plants are valuable in the autumn garden to contrast with plants of brilliant autumn coloring. Another valuable plant for this purpose is *Magnolia glauca*, the Sweet Bay of the Atlantic and Gulf Coast regions from Massachusetts to Texas. This *Magnolia* is still covered with its bright green shining leaves which are silvery white on the lower surface and these will not fall for at least another month. Attention has often been called in these Bulletins to the value of this tree in New England gardens. Few deciduous-leaved trees have more beautiful and more persistent foliage; the cup-shaped, creamy white flowers continue to open during at least two months in early summer and fill the air with their fragrance, and the fruit, like that of all the *Magnolias*, is interesting and handsome when the bright red seeds hang from it on slender threads.

Roadside Plants. Much attention has been paid here for several years in experimenting to secure the best plants to occupy the narrow beds between the driveways and the gravel paths which follow them, and thus far the most satisfactory plant found for this purpose has been *Rosa virginiana*, often called *R. lucida*, the seashore Rose of New England, an upright shrub from two to three feet in height which is still covered with its leaves lustrous in the early season and turning yellow late in October. A plant which came here many years ago from the island of Mt. Desert on the coast of Maine, and now distinguished as var. *lamprophylla*, is a handsomer plant than the typical form, of denser habit and with darker green lustrous leaves. The large pink flowers and the showy red hips are similar to those of the common form. The other plants which have been most successfully used for this purpose are the Fragrant Sumach (*Rhus canadensis*) and *Xanthorhiza apiifolia*. The Fragrant Sumach is a widely distributed North American shrub which rarely grows more than five feet tall, and when planted in good soil is often broader than high with lower branches spreading flat on the ground and upper branches erect, spreading or drooping. In early spring before the leaves appear the branches are covered with clusters of small bright yellow flowers which in June are followed by dull red fruits which are much hidden by the small compound leaves. Among the small shrubs in the Arboretum few are more brilliant at this season of the year for the leaves turn gradually to bright scarlet and orange. The *Xanthorhiza* has also been largely and successfully used here; it makes a neat border plant and is also well suited to grow under shrubs or trees. This low shrub spreads rapidly by underground stems which do not grow more than twelve to eighteen inches high. The small purple flowers, which are arranged in drooping clusters, appear as the leaves unfold; these are pinnate, of a cheerful green color, and turn late in the autumn pale yellow, orange or occasionally scarlet.

Some dwarf broad-leaved evergreens. The color which the leaves of a few of these assume in the autumn add greatly to the interest of these plants in November. The most conspicuous change of color on any of those in the Arboretum is on the Rocky Mountain *Mahonia* or

Berberis repens. From light bluish green the leaves turn to pale violet color in the autumn. This is one of the handsomest and hardiest evergreen plants which can be used here to cover the ground under larger plants. It grows only a few inches high, spreads rapidly by underground stems, and the bright yellow flowers are large and conspicuous. The small dark green leaves of the Box Huckleberry, *Gaylussacia brachycera*, become in the autumn deeply tinged with red when the leaves are exposed to the sun, and the leaves of *Pachystima Canbyi* are more or less tinged with violet. These are two of the rarest plants in the United States. The leaves of *Leucothoe Catesbaei* turn bronze color in the autumn. This plant has always been considered hardy in eastern Massachusetts but has occasionally suffered seriously here during the winter. The Rhododendrons which are hardy here and the Laurel (*Kalmia latifolia*) have not before given a better promise of abundant bloom in the spring. *Pieris floribunda*, often called *Andromeda floribunda*, is already covered with its flower-buds which, conspicuous and ornamental during the winter, open here usually late in April. This native of the southern Appalachian Mountains is an old inhabitant of gardens and is much propagated by nurserymen; it certainly is one of the handsomest of the broad-leaved evergreen shrubs which are hardy in this climate, and with the exception of the Laurel (*Kalmia latifolia*) and a few Rhododendrons, is the most valuable broad-leaved evergreen which can be grown in the northern states. Its Japanese relative, *Pieris japonica*, with larger and more beautiful flowers which open earlier, is less often injured by spring frosts.

The Inkberry (*Ilex glabra*) which is a common sea shore inhabitant from New Hampshire to Texas, is a beautiful garden plant, although occasionally in the Arboretum it loses its branches and upper leaves. There is a fine clump of this beautiful shrub on the right hand side of the Bussey Road opposite the bed of Laurel.

Autumn flowers are not abundant in the Arboretum in October and November, although a few may still be found here. The northern Witch Hazel, *Hamamelis virginiana*, is still covered with flowers which are conspicuous for their clear yellow strap-shaped petals. The autumn color of the leaves of this plant is also yellow but of a darker shade than the flowers, and the leaves usually do not fall until the flowers begin to open; these remain for a long time in good condition on the naked branches, making this shrub one of the most attractive features of forest borders in the eastern United States. It has been largely planted in the Arboretum.

Pyrus ovoidea. The late autumn coloring of the leaves of this Chinese tree is hardly surpassed by that of any other plant in the Arboretum, and it is well worth a place in any garden for this alone. It is interesting, too, because the leaves of no other Pear-tree turn to such brilliant colors, and because the yellow juicy fruit, unlike that of other Pears, is smaller at the apex than at the base. There is a good specimen of this tree in the Pear Collection on the left hand side of the Forest Hills Road near the Forest Hills entrance.

These Bulletins will now be discontinued until next spring.

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